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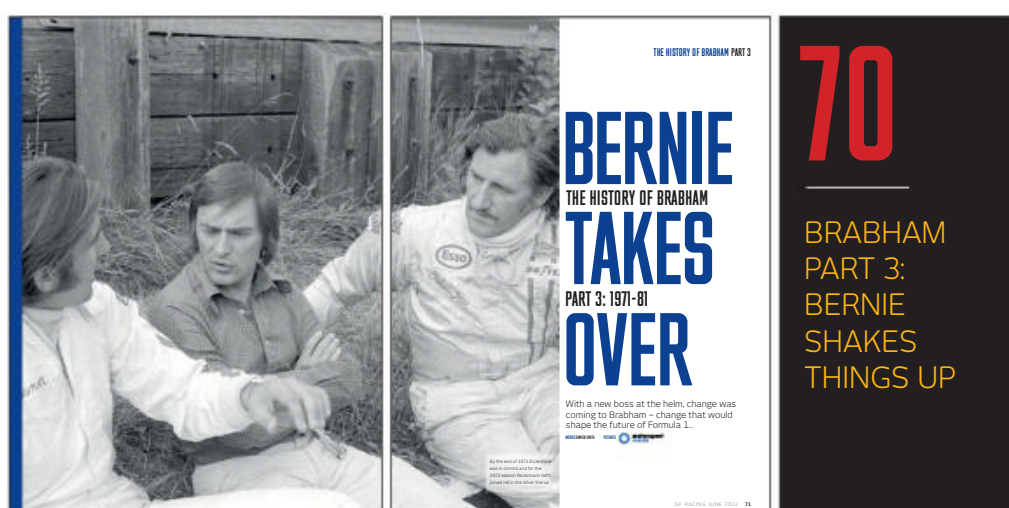
1 ETON STREET, RICHMOND,
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SECTOR 1

- 4 IGNITION**
Old rivalries have been rekindled in the 2022 title fight
- 6 PARADES**
The best images from Miami and Barcelona
- 16 F1 INSIDER**
Tension between FIA and Liberty; no 23rd race
- 22 F1 ANALYST**
Fernando Alonso isn't just making up the numbers
- 24 UNDER THE HOOD**
The importance of spark plugs in F1

SECTOR 3

- 90 SUBSCRIPTIONS**
Father's Day special: 20% off
- 92 REPORTS**
From Miami and Spain
- 100 PREVIEWS**
Of the Azerbaijan and Canadian GPs
- 104 PRODUCTS**
Reviews of the best F1 gear
- 106 FLAT CHAT**
The physical toll of F1's new rules on the drivers



CONTENTS

JUNE 2022

SECTOR 2

- 32 BATTLE RENEWED**
It's been a while since Ferrari and Red Bull went head-to-head, but who has the upper hand?
- 40 MIAMI TRAVELOGUE**
What did F1's latest US race actually feel like on the ground?
- 48 IN CONVERSATION WITH...**
Frédéric Vasseur, Alfa Romeo's much happier team principal
- 50 ALPHATAURI**
Franz Tost gives us a personal tour of the team's Faenza facility
- 56 JENS MUNSER**
One of F1's leading helmet artists explains his craft and his links with the Schumacher dynasty
- 62 TONY BROOKS TRIBUTE**
A fantastic long interview with Tony Brooks from our archives
- 70 THE HISTORY OF BRABHAM**
Part 3 of the series covers Bernie Ecclestone's takeover
- 80 MAURICE HAMILTON**
Maurice's new column takes an alternative look at jewellery in F1
- 82 NOW THAT WAS A CAR**
The Aston Martin DBR4, Aston's first but flawed Formula 1 car

F1 PRO

- 29 STRAIGHT TALK**
Why virtual media access shouldn't remain the norm
- 30 PROFILE: OLIVER STEIL**
CEO of Mercedes' remote solutions partner TeamViewer



Ben
Anderson



Red Bull vs Ferrari: two old rivalries rekindled

Who would you pick to win in a battle between Charles Leclerc and Max Verstappen? The way this year's title fight is shaping up, this match-up – and a renewed contest between their respective teams – is going to define the first season under F1's revolutionary new rules.

We can't completely write off Mercedes just yet, especially after its Spanish GP breakthrough (see pages 96-99), but Ferrari and Red Bull are clearly a step (or several) ahead – and it won't be easy for Mercedes to make up ground under F1's budget cap.

It's been a decade since Ferrari and Red Bull fought for the world championship, and the same is true for Leclerc and Verstappen – who were bitter karting rivals when Sebastian Vettel was just about beating Fernando Alonso to the 2012 title.

Leclerc's and Verstappen's paths diverged after karting, until they converged again in F1. Both are blisteringly quick drivers, but very different characters. Stuart Codling's superb cover feature (page 32) tackles the background to these two important rivalries, and contains some fascinating insight from Xevi Pujolar, the leading F1 engineer to have worked with both drivers.

If you can't get enough of 'Coddors', his Miami travelogue is also well worth a read. We dispatched him to America to get a taste for F1's newest venue (see page 40). America is clearly starting to 'get' F1, thanks in no small part to Netflix, but we're not sure Coddors fully grasped Miami...

While taking a brief hiatus from the celebrity-spotting, fake marina schmoozing and iguana-management (yes, really!) he also took a ride around the track with Aston Martin reserve driver Nico Hülkenberg (page 46).

Meanwhile, our staff writer Oleg Karpov has been busy watching famed German helmet designer Jens Munser at work. While seeing Mick Schumacher's latest paint job coming to fruition, Oleg was treated to some stories about Mick's father Michael and his 'brother from another mother', Sebastian Vettel. It seems the urge to make political statements through colour schemes is another thing Vettel shares with his hero and mentor (see page 56).

Schumacher and Vettel are both renowned for being workaholics, and the same might be said of Franz Tost. In the build-up to the Emilia Romagna GP, Oleg was invited to Faenza for a guided tour of the expanding AlphaTauri factory. At a time when increasing numbers of people are deeply concerned with work/life balance and burnout – especially as F1 expands its calendar – Tost is clearly a man who lives and breathes his profession (see page 50).

How many people can truly say they've "never lived more than seven minutes away from work"?

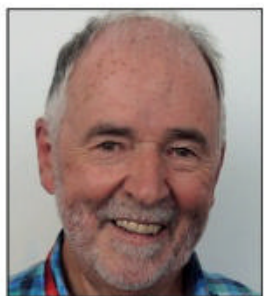
• This month we're conducting a reader survey. We'd love to have your thoughts on how and why you read *GP Racing*, so we can do better. To take part, and be in with the chance of winning an Amalgam Williams FW28 nosecone, go to page 79.

Contributors



OLEG KARPOV

Oleg's been getting around this month, with a trip to AlphaTauri (p50), plus a visit to see helmet design guru Jens Munser in action (p56)



MAURICE HAMILTON

Maurice has been contributing to this magazine for years but now has his own column. His 'Alternative View' on F1 matters is on page 80



STUART CODLING

Coddors has analysed 2022's head-to-head of Ferrari vs Red Bull (p32), as well as giving you his own take on the inaugural Miami GP (p44)



CARL BINGHAM

Carl joined LAT Images as a digital technician in 2018 but is now on the F1 beat. Carl snapped the pictures for our AlphaTauri tour (p50)

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A black and white photograph of a woman standing next to a vintage open-top car. The woman is wearing a light-colored, knee-length dress with a lace-like pattern, a matching beret with a flower, and long dark gloves. She is holding a small white handbag and has her right hand raised near her face. The car is a light color, and its interior, including the steering wheel and dashboard, is visible. The background is a dense, dark foliage.

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Lucking in during Golden Hour

The final minutes of FP2 found me having to improvise in a bit of a hurry. During the track walk on Thursday I'd lined up a potential shot from one of the bridges over the circuit. I had some commercial work to do earlier in this session on Friday, then headed over... and found my recce had been inadequate. The shot wasn't there.

There were only 10 minutes of the session left, but the light was nice – and as a grand prix photographer you can't waste a minute of track time. I found another angle here, looking over at the Turn 7 exit apex. With a slow shutter, the shape of the kerb accentuates the sense of speed.



Photographer
Glenn Dunbar

Where Miami, USA

When 6:23pm, Friday
6 May 2022

Details Canon EOS-R3
100-500mm lens, 1/8th @F8





Miami: a whole different ball game

Formula 1's inaugural visit to Miami generated lots of opportunities for unusual images – provided you were in the right place at the right time. Generally speaking the drivers were in an upbeat and happy place, although there were a few murmurings of discontent about how much pre-event PR work they were having to do...

The Miami Autodrome threads around the Hard Rock Stadium, home of the Miami Dolphins NFL team, and there's loads of their iconography around. I spotted Pierre walking back from the autograph session in his Dolphins top and he was delighted to pose for a few shots in front of this mural.



Photographer
Carl Bingham

Where Miami, USA

When 11:41am, Saturday
7 May 2022

Details Canon EOS-1DX MkII
24mm lens, 1/2000th @F3.5

Ferrari – getting faster everywhere

It's nice to see Ferrari back in regular contention for race wins. But it's more than just the car that's improved. As a team Ferrari has taken a step towards recreating the glory of the Schumacher years – the garage is better-organised, the pitwork much tighter. In fact, Ferrari recorded the two fastest pitstops during the Spanish GP weekend.

I stood in the entrance of the McLaren garage to get this shot at a slow shutter speed and emphasise the sense of motion. Back when races started at 2pm the pitlane wasn't in shadow for the first stops but now you just have to work with it throughout: the whited-out background draws your eye towards the driver's head.



Photographer
Steven Tee

Where Barcelona, Spain

When 4:08pm, Sunday
22 May 2022

Details Canon EOS-1DX MkII
24-105mm lens, 1/8th @F20









Orange army on 'Nando's territory

Time was when the Circuit de Barcelona-Catalunya's grandstands would be heaving with fans bearing allegiance to one driver alone: Fernando Alonso. But while there was still plenty of Fernando love going on this year, several stands were almost completely bedecked in red (for Carlos Sainz) or orange (for the world champion).

I was at the top of the main grandstand throughout the race, giving a commanding view over most of the circuit. I'd spotted this composition earlier on and then Max and Checo obligingly drove around together on the cooling-down lap, so it was just a matter of waiting for them to come past.



Photographer
Sam Bloxham

Where Barcelona, Spain

When 4:43pm, Sunday
22 May 2022

Details Canon EOS-1DX MkII
200-400mm lens, 1/1600th @F5.6

Seizing the moment on the Turnpike

I like this because it's a simple picture and unique in many ways – not least because we may not see its like again. This is the much-maligned chicane in the back corner of the Miami circuit, and to get this shot I had to ask permission from a policeman to go up one of the ramps which usually takes traffic from the stadium onto the Florida Turnpike. Between sessions the road's owners decided they didn't want us on there.

I shot from over the parapet with a short-ish zoom lens – this is actually the closest I've been to an F1 car from overhead in almost 40 years. The colour of the run-off ties in nicely with the identity of the circuit.



Photographer
Steven Tee

Where Miami, USA
When 2:43pm, Friday
6 May 2022

Details Canon EOS-1DX MkII
24-105mm lens, 1/1200th @F5.6





HOW JEWELLERY ROW BECAME A PROXY FOR F1'S NEW WAR WITH THE FIA

01 **Lewis Hamilton arrived at the** pre-event FIA press conference in Miami wearing three watches, four necklaces, eight rings, earrings in both his ears and a nose piercing. The seven-time world champion wanted to ensure his dissatisfaction with the FIA's position regarding drivers wearing jewellery while driving F1 cars was clearly visible.

A rule forbidding it has existed for quite a while now, but the sport's regulatory body – in the form of new race director Niels Wittich – has only really been seeking to enforce it since the beginning of this season.

Sebastian Vettel took a similar approach in mocking another recent FIA initiative to force drivers to wear fireproof underwear underneath their fireproof leggings by deciding to appear in the Miami paddock wearing a pair of underpants over his race overalls.

Both actions result from drivers' growing sense of frustration with the FIA, born out of them feeling it focuses too much on trivial topics – while the more important issues the drivers themselves raise are sometimes ignored.

In Miami, race direction effectively took no notice of Carlos Sainz's comments after his accident during second practice. Having lost control of his car when approaching the tight chicane encompassing Turns 14-15, the Spaniard spun off into a concrete barrier, causing heavy damage to his Ferrari. The subsequent request from drivers to install a TecPro barrier at this position was rejected by the FIA. The following day Esteban Ocon crashed at the same spot – with consequences so severe that Alpine had to change the Frenchman's chassis.

Sainz didn't hold back when asked about the matter at the next event in Barcelona: "Look, I crashed at a very low speed and it hurt. It shouldn't have hurt [that much] compared to other crashes I had in my career. We asked: 'Let's do something in this corner'. And the response was, 'It was a very freaky crash, it shouldn't happen again'. It happened [again]. As far as I'm concerned, there was TecPro available to be put there and nothing happened.

"At the end, we left the weekend with two drivers with a sore neck and nearly two broken chassis from very slow crashes. So there's definitely something to review."

Although Ocon himself later said that he was "very reassured" by the chat with the race director about what

happened and the changes planned, it's evident the drivers no longer tone down their language when talking about the FIA in the media. The Frenchman's team-mate Fernando Alonso labelled FIA stewards "incompetent" and "not very professional" for giving him a five-second penalty in Miami without first reviewing telemetry evidence of his attempts to give back an advantage gained for a track limits offence, adding that the reforms announced by the federation after last year's controversial Abu Dhabi Grand Prix have yet to yield the desired result.

Alonso's strong comments risked repercussions, as rumours suggested he could've faced a hefty fine for criticising the stewards. But the matter was ultimately resolved internally

**BOTH ACTIONS RESULT FROM DRIVERS'
 GROWING SENSE OF FRUSTRATION WITH
 THE FIA, BORN OUT OF THEM FEELING IT
 FOCUSES TOO MUCH ON TRIVIAL TOPICS**

PICTURES: GLENN DUNBAR; ZAK MAUGER; MARK SUTTON



Lewis Hamilton's 'protest' in Miami (below) was in response to the FIA's recent enforcement of its jewellery rule. Drivers were also critical of the FIA response to accidents involving Sainz (left) and Ocon (right) in Miami



after a chat between the driver and the new FIA president, Mohammed Ben Sulayem. The Spaniard described it as “a nice and friendly talk” – but many believe that it's Ben Sulayem who is the primary irritant for drivers. While it's Wittich who's the immediate authority when it comes to topics like jewellery and underwear, hardly anyone in the paddock doubts that the new race director isn't just the middle man – and that the real impetus is coming directly from the FIA president.

“I love jewellery, I absolutely love it,” Ben Sulayem insisted in his recent *Daily Mail* interview. “But in the car there can be no choice. People say they [the rules] haven't been implemented before. Don't ask me why not. People can ask the old regime why that is the case.”

The Dubai-born Emirati has managed to perplex many people since the start of his FIA presidency, both with his management style and with some controversial statements. Take, for instance, his rhetoric about tarnished former race director Michael Masi. “I have no personal issue [with him],” said Ben Sulayem, hinting Masi might even return to F1 in a race director role. “Michael is there, and we might use him. I didn't say we were getting rid of him. I said we might use him. He may be in a good place to use. We are open to everything.”

Such a prospect, one must assume, does not appear enticing to either Hamilton or his Mercedes team, given it was Masi's mistake that effectively cost them the drivers' title in last year's Abu Dhabi showdown.

It looks as though, after just five months in his new role, Ben Sulayem has managed to create tension on all fronts between the FIA and Formula 1. And while F1 bosses are yet to defiantly show off all their jewellery in public, and have not yet taken to wearing their underpants over their trousers, insiders indicate they too are far from impressed by the FIA's stance.

One of the biggest points of their dissatisfaction arose during April's F1 Commission meeting in London, where Ben Sulayem blocked the doubling of the number of sprint races in 2023. The teams and F1 have already agreed to hold six sprints next season, but the FIA has objected, explaining that it is “still evaluating the impact of this proposal on its trackside operations and personnel”.

That move could also be explained by Ben Sulayem's desire to secure better financial terms from Formula 1. ▶

“We say Formula 1 is the pinnacle, and it is,” he noted, while speaking about the decision, “so we at the FIA need the resources to govern the technical and financial side of a billion-dollar sport in a manner that respects that. We need the capability to observe those standards.”

And while publicly he states that he ‘did not ask for more money’, many see his recent actions as an attempt to emphasise that the FIA’s coffers are not in the best condition after Jean Todt’s three terms. A \$25million loss is projected for this year – while the organisation Ben Sulayem runs is responsible for overseeing one of the most financially successful sports on the planet.

However, the attempt at muscle-flexing could prompt a backlash from Liberty Media. As insiders suggest, F1’s growing dissatisfaction with FIA-provided services has made its bosses seriously question the organisation’s involvement in the series. And it perhaps shouldn’t come as a huge surprise given a mistake by a key FIA official left a big stain on F1’s reputation last year, souring the impression from one of the best seasons in Formula 1’s history.

While without the FIA Liberty Media would not be able to use the Formula 1 brand and enjoy world championship status, such thinking is nevertheless not unreasonable. The series is poised to reach a new peak of popularity, with promoters constantly reporting record audiences and TV ratings soaring. The FIA’s potential losses from a possible rupture could be far more significant than those of F1, whatever it may be called in such a scenario.

Ben Sulayem’s desire to get more from Formula 1 is understandable. Still, much of the federation’s income already comes from F1. Many in the paddock question whether the FIA is managing its budget wisely.

Another option is to try and do away with most of the FIA’s responsibilities, particularly in terms of providing refereeing, leaving the federation with a sort of ceremonial role in F1. This would potentially allow the championship’s bosses to reform one of its most problematic areas themselves – rather

Seb Vettel was another to have a dig at the FIA in Miami (right). Ben Sulayem (below) has had quite a tricky first few months as FIA president



than being content with the cosmetic changes the FIA has been making to its operations.

Such a schism still seems highly unlikely, but future developments will largely depend on what course of action Ben Sulayem chooses to take going forward.

F1 DITCHES 23-RACE PLAN SO RUSSIA GAP REMAINS BLANK

02

Formula 1 has officially given up on the idea of holding 23 races this year. The Russian GP, cancelled in February following Russia’s invasion of Ukraine, won’t be replaced.

The race in Sochi was scheduled for the end of September and was to be the first in a string of consecutive grands prix across three weekends. F1 was to travel from Russia to Singapore and then straight to Japan. Ultimately, it was logistics that proved to be the main obstacle to F1 fulfilling its plan for a record-breaking 23-race calendar. ▶

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MAX VERSTAPPEN: WHAT’S IT LIKE BEING FORMULA 1’S NEWEST CHAMPION?

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- > Chess with Mick Schumacher
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Formula 1 was initially keen to replace the race in Sochi but has failed to come up with a suitable alternative. Qatar was considered favourite early on. The country already has an existing contract with F1 and held a race in November last year at the Losail track. There were no plans to hold the Qatari race this year as the country is busy preparing for the football world cup, but with the cancellation of Sochi, a return to Losail was back on the agenda. That option, though, was soon dismissed, with one of the main reasons being that it's too hot in Qatar in September. Concerns about the potential impact on the crowd were too great.

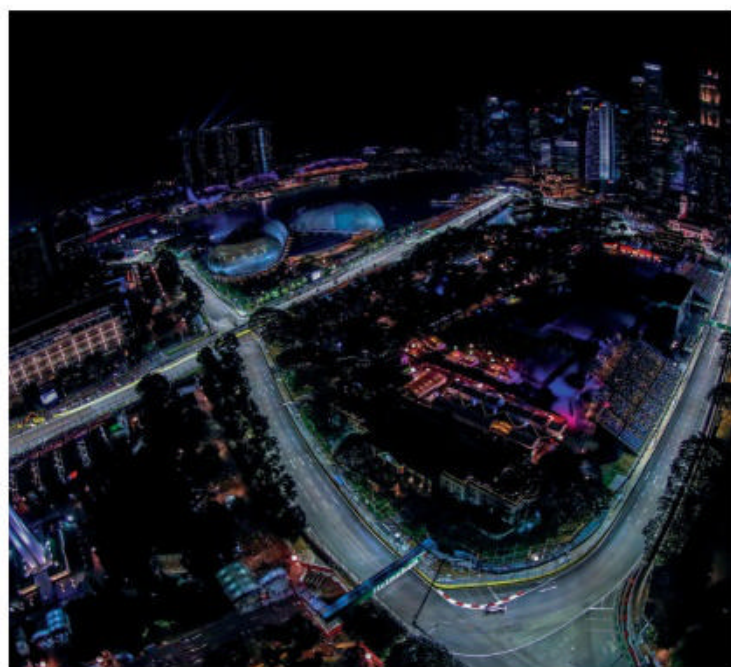
Subsequent reports suggested F1 could hold two consecutive rounds in Singapore. However, that idea didn't seem to be welcomed by local organisers, worried that a second race could potentially harm the image of their 'unique' grand prix.

It is believed F1 held brief discussions with Portimão, which hosted the Portuguese GP the past two years, and Hockenheim. But logistical issues make it almost impossible for F1 to move all of its cargo from Europe to Singapore in two or three days.

Finally, Istanbul emerged as one of the best options from a logistical standpoint, but local organisers simply couldn't afford another grand prix. F1 returned to Turkey in 2020 and held another race in Istanbul in 2021, but that was only possible because of the pandemic. As F1's priority was to maintain a healthy number of races, some venues – Turkey included – secured very cheap (or even free) special deals. The situation is different in 2022, though, and F1 would only agree to replace the Russian Grand Prix if it made sense financially. In the case of a potential race in Turkey, it didn't.

The final decision proved to be popular within the paddock. "In principle, we were committed to doing 23 races this year," said McLaren team principal Andreas Seidl. "But of course, not doing a race now at this specific weekend and doing one less is definitely quite welcome by everyone within the team in terms of the burden we put on our people."

"And in the end, it was a decision F1 had to make after being clear that we don't go to Russia, to see if it makes sense to do another race, which they studied in detail. They came to the conclusion it is the right compromise when you look at the financials but also in terms of the logistics. So we are happy with it."



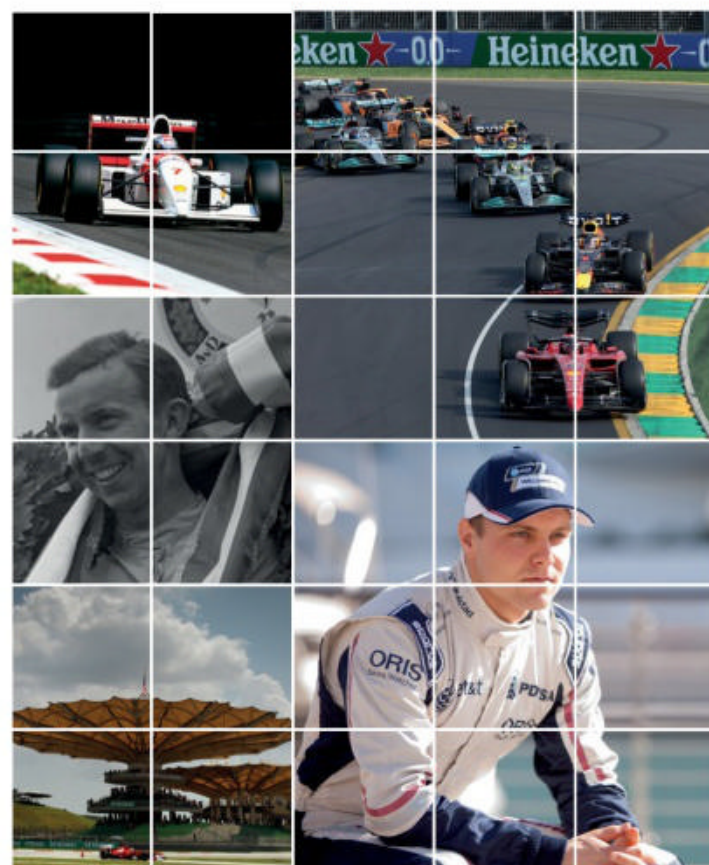
Both Qatar (top) and Singapore (above) were in the running to replace the cancelled Russian GP, but F1 has decided to stick with 22 races

FORMULA 1 WAS INITIALLY KEEN TO REPLACE THE RACE IN SOCHI BUT HAS FAILED TO COME UP WITH A SUITABLE ALTERNATIVE

F1 MASTERMIND

Your chosen specialised subject: the world's greatest motorsport

- Q1** The Malaysian GP was run 19 times. How many of those did Ferrari win: 3, 7 or 10?
- Q2** With which team did Esteban Ocon make his F1 race debut at the 2016 Belgian GP?
- Q3** True or false: excluding the 1953 Indy 500, Alberto Ascari won nine consecutive championship GPs?
- Q4** Michael Andretti's best qualifying in his 13 races with McLaren in 1993 was fifth, but what was his highest finishing position?
- Q5** Which circuit's first world championship F1 GP was won by Graham Hill and last by Gilles Villeneuve?
- Q6** I started 229 GPs from 1996 to 2009 for Minardi, Jordan (twice), Benetton, Sauber, Renault, Force India and Ferrari, winning three times. Who am I?
- Q7** What did Charles Leclerc achieve for the first time at this year's Australian GP?
- Q8** Who was the last Ferrari driver to win the French GP and in which year did he achieve it?
- Q9** Valtteri Bottas is in his 10th season with only his third team, but how many races did he start for his first team, Williams: 77, 85, 90?
- Q10** Tony Brooks won six points-scoring F1 GPs, the same number as which two world champions?



1 2 Manor **3** True **4** Third (Italian GP) **5** Jarama
6 Giancarlo Fisichella **7** A grand chelem (win, pole, fastest lap and lead every lap) **8** Felipe Massa, 2008
9 10 John Surtees and Jochen Rindt



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“He’s not an engineer, but he knows how systems work and he gives guidance as to how the systems could work better while not trying to redesign them himself, a thin line that’s important to understand.”

Having worked so closely with Fernando, Eric is also surprised that some people see him as a disruptor within a team. “I don’t know why this reputation has built up,” Boullier adds. “He’s never been a team destroyer. He’s a real team player – but that does not always include the driver next door. He works well in a model where he’s number one and he has a number two who can help him and they can work together.”

“When he was with Jenson Button they were clever enough to understand each other, to respect each other. With Stoffel Vandoorne, he [Alonso] could use Stoffel’s input for his own benefit so that’s why the relationship was working. If he cannot use a driver for his own benefit then that person becomes an enemy. But I saw him as the best team builder ever – he’s a great competitor, he’s self-focused but he wants to include everyone around him to win.”

That element of Alonso came across with his current Alpine team via radio at last year’s season finale in Abu Dhabi: “I’m very proud

of you guys, we executed every Sunday to perfection,” Alonso told the team on the slow-down lap. “The best is yet to come next year, I promise. This [season] was a warm-up, you know, like the boxers. They do a game just before the big fight – this was 2021 for us – but you were amazing.”

Sadly, Alpine has not yet produced a car as consistently fast as Alonso needs, but it does offer him moments to shine. And the partnership with Frenchman Esteban Ocon – 15 years Fernando’s junior – is certainly not as destructive as the one we saw with Lewis Hamilton back in 2007, as Eric agrees: “Esteban has been trying to develop his own position in the team, using Fernando for his own benefits in a similar style and they appear to have a good balance. The pairing works not too bad and is interesting to watch.”

The skills, the relationships all seem to be there, but can Fernando add to the number that means the most to him: his tally of 32 grand prix wins? That depends on the progress made by Alpine and it needs to happen quickly. Management changes have not made life easy, yet the core engineering structure has developed for several years and working with such a technically astute, cooperative driver surely helps that shift. When Alonso claimed his first victory in F1 in Hungary in 2003, he said he hoped to have a long career with lots more victories. That career length has been achieved, but those extra wins have often proved a little more difficult to come by.

ALONSO STILL HANGING IN FOR MORE GLORY

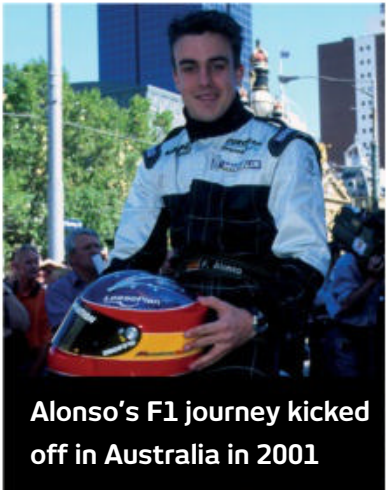
Fernando Alonso is at a truly significant stage in his career. At Monaco he started his 340th grand prix and, after Baku, he will have surpassed Michael Schumacher’s 7764 days of involvement in Formula 1. That means more than two decades covering a debut with Minardi in 2001 to Alonso’s current status as a feisty points scorer for Alpine – and just like Schumacher there have been gaps in that career when F1 was not Fernando’s focus. But Alonso is stepping into a longer period than anyone, whether through time or number of races. Following the Italian Grand Prix in September, assuming he competes in each scheduled race, Fernando will have equalled Kimi Räikkönen’s record of 349 grands prix started. It’s a numbers game.

Numbers do matter to Fernando. Scoring two world titles instead of five, having lost out by eight points across three seasons in battles with Kimi Räikkönen and Sebastian Vettel, must have sharpened his sensitivity to the slightest difference. But those figures are less important to Alonso in

his current mindset than the information he can absorb from those around him. Hand him an update on the car that in theory is worth two tenths of a second and, according to those who have worked closely with him, he will typically find those two tenths – unlike his team-mates, who often struggle to adjust their driving styles to find the gain.

Alonso is also renowned for his understanding of strategy. Eric Boullier, current managing director of the French Grand Prix and former race director at McLaren, was suitably impressed when working with the Spaniard. “Fernando reads every kind of detail,” Boullier says. “He hides away in his changing room in the motorhome, and you might think he’s relaxing, but most of the time he is working – he’ll study tyre degradation for all the rival cars around him from Friday practice onwards, and by Sunday he’ll know which rivals he’ll need to push and which he needs to keep at a distance. In the race he absorbs even more detail from the spectator screens, using that information to gain advantage. He is incredibly strong on strategy.”

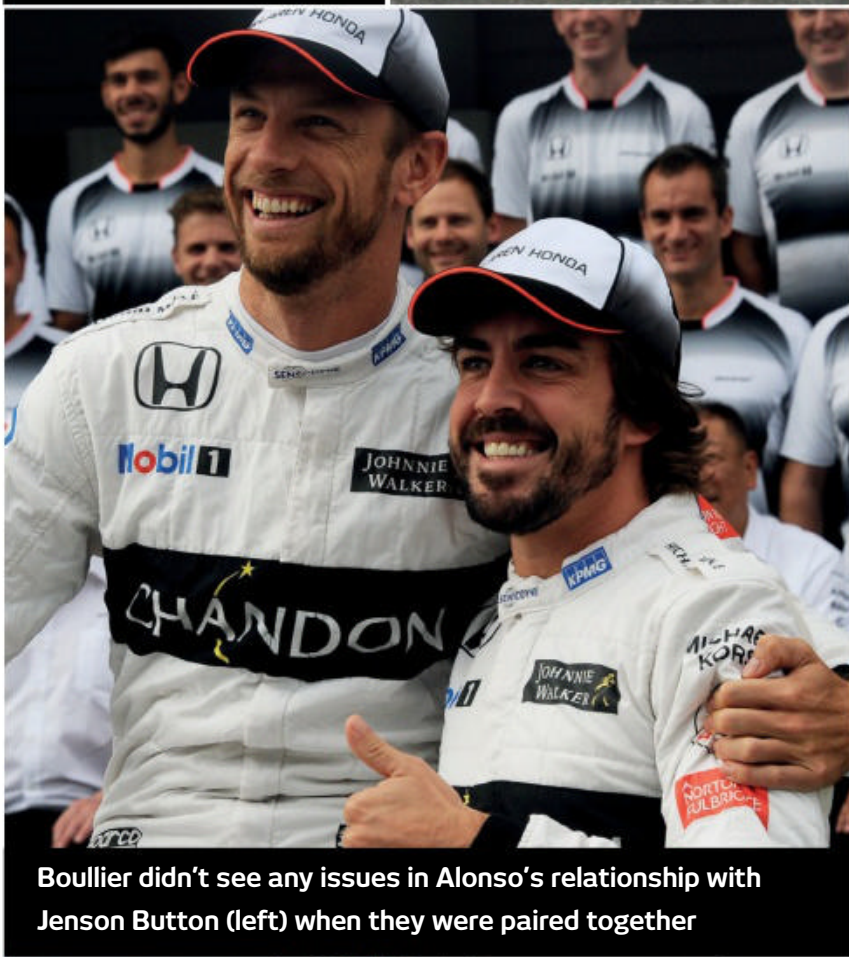
Rival engineers have been impressed to hear the sort of information Alonso can absorb over team radio as well. It is all part of a mindset which began as a youngster in karting, and then as a mechanic for other kart racers while Fernando was trying to build his own professional racing career. “He’s one of those drivers who understands everything from the technical part of the car,” confirms Eric.



Alonso's F1 journey kicked off in Australia in 2001



Alonso scored a solitary podium last season but was full of praise for the team



Boullier didn't see any issues in Alonso's relationship with Jenson Button (left) when they were paired together



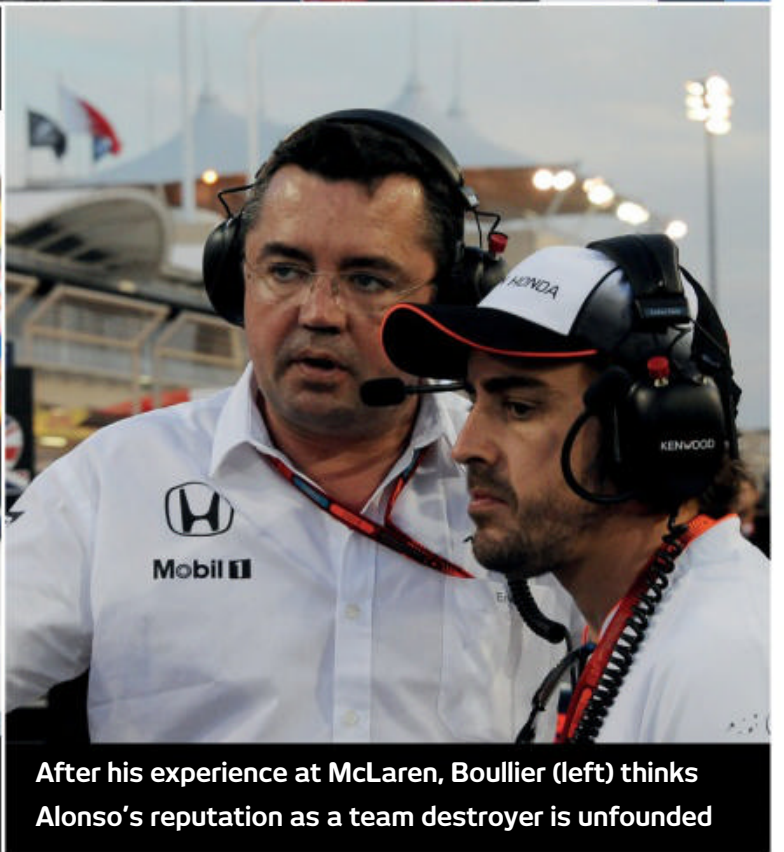
He's had a long career but Spain in 2013 stands as Alonso's most recent F1 victory



Fernando has always been strong on strategy and absorbing information, according to Boullier



Alonso appears to have no issues with Esteban Ocon (right)



After his experience at McLaren, Boullier (left) thinks Alonso's reputation as a team destroyer is unfounded



UNDER THE HOOD

PAT SYMONDS

PICTURES  **motorsport** IMAGES

1.6-litre turbo-hybrid V6 introduced in 2014.

The reason lies in a simple sentence in the regulations that upended many years of race engine design philosophy when this hybrid engine was introduced. That sentence was Article 5.1.4 of the 2014 technical regulations, which stated fuel mass flow must not exceed 100kg/hr.

Up until this point race engine design was very much based on getting as much air into an engine in a given time as was possible and then adding the requisite amount of fuel to produce a good burn in the cylinder. Getting air into the engine relied on good gas flowing of the inlet, high engine speeds or, in the extreme, pressure charging. The fuel injected would be close to that required for

complete combustion at what is known as the stoichiometric ratio. This is simply the ratio of fuel and air that gives the most complete combustion and is determined by the chemistry of the fuel. The stoichiometric ratio for gasoline is around 14.7:1, that is for every gram of fuel burnt, 14.7 grams of air is needed. For E10 (introduced this season) the ratio is around 14.1:1. When an engine is running with a stoichiometric ratio it is also said to be running at $\lambda 1$ (Lambda 1). Maximum power is generally produced with a slightly rich mixture – that is one that has excess fuel in it. While this may give good power it is not very efficient.

With the fuel limitations imposed in 2014, it was soon obvious that the best way to run the engines was in fact on the lean side (deficit of fuel). The excess air added to the energy in the exhaust. This was then recovered by the MGU-H (the motor/generator attached to the turbocharger). The trouble with a lean mixture is that it is hard to ignite initially but at the same time it is prone to igniting earlier in the compression stroke than is desired – creating what is known as ‘detonation’ or ‘knock’, which damages the engine.

Gas engines had solved this problem many years earlier by forming a small chamber around the spark plug into which a relatively rich mixture was introduced. This was easily ignited by the spark plug and the resulting rapidly expanding flame was ejected out of small holes in the chamber, much like a flame thrower fires a jet of flame. This was known as pre-chamber ignition and later, ►

SPARKING OFF AN IGNITION REVOLUTION

In late 2015 stories emerged of an engineer from Mercedes High Performance Powertrains leaving the organisation to join Ferrari and taking knowledge with him that would benefit the Scuderia. At the time much was made of secret spark plug technology that Mercedes had exploited. It was said this had not only been the largest contributor to the phenomenal performance of the Mercedes engine in 2014 and 2015, now it had also been leaked to Ferrari.

Perhaps the first thing to say to put the record straight is that it is highly unlikely this was the case. Of course, when engineers transfer from one competitor to another – be they chassis or engine specialists – an amount of intellectual property is transferred with them, but this knowledge is only that which is in their heads. The consequences of industrial espionage are so severe that no one would risk an accusation these days.

Of more interest is how and why a spark plug could make a significant difference to the performance of an engine when racing engines



In Canada in 2015 Ferrari (top) followed Mercedes and introduced pre-chamber ignition. Mahle, meanwhile, has since developed jet ignition (above)

have always relied on highly specialised plugs for many years. The answer lies in the fact that the ignition of a current F1 engine is extremely different to either that of a conventional road car engine or indeed any race engine prior to the

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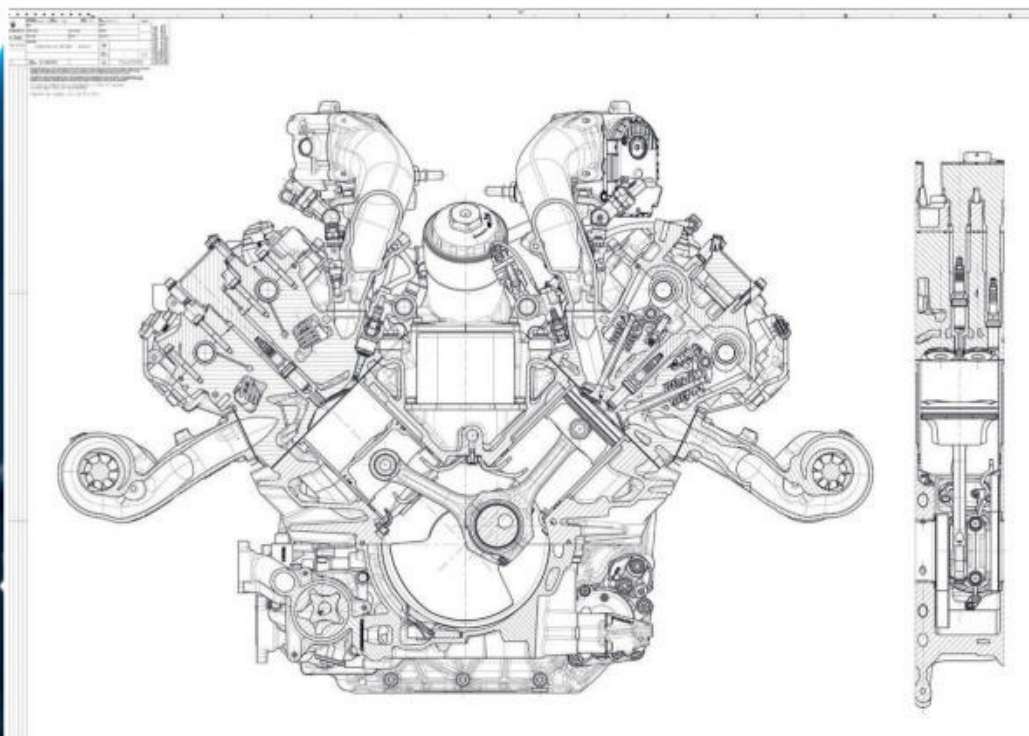
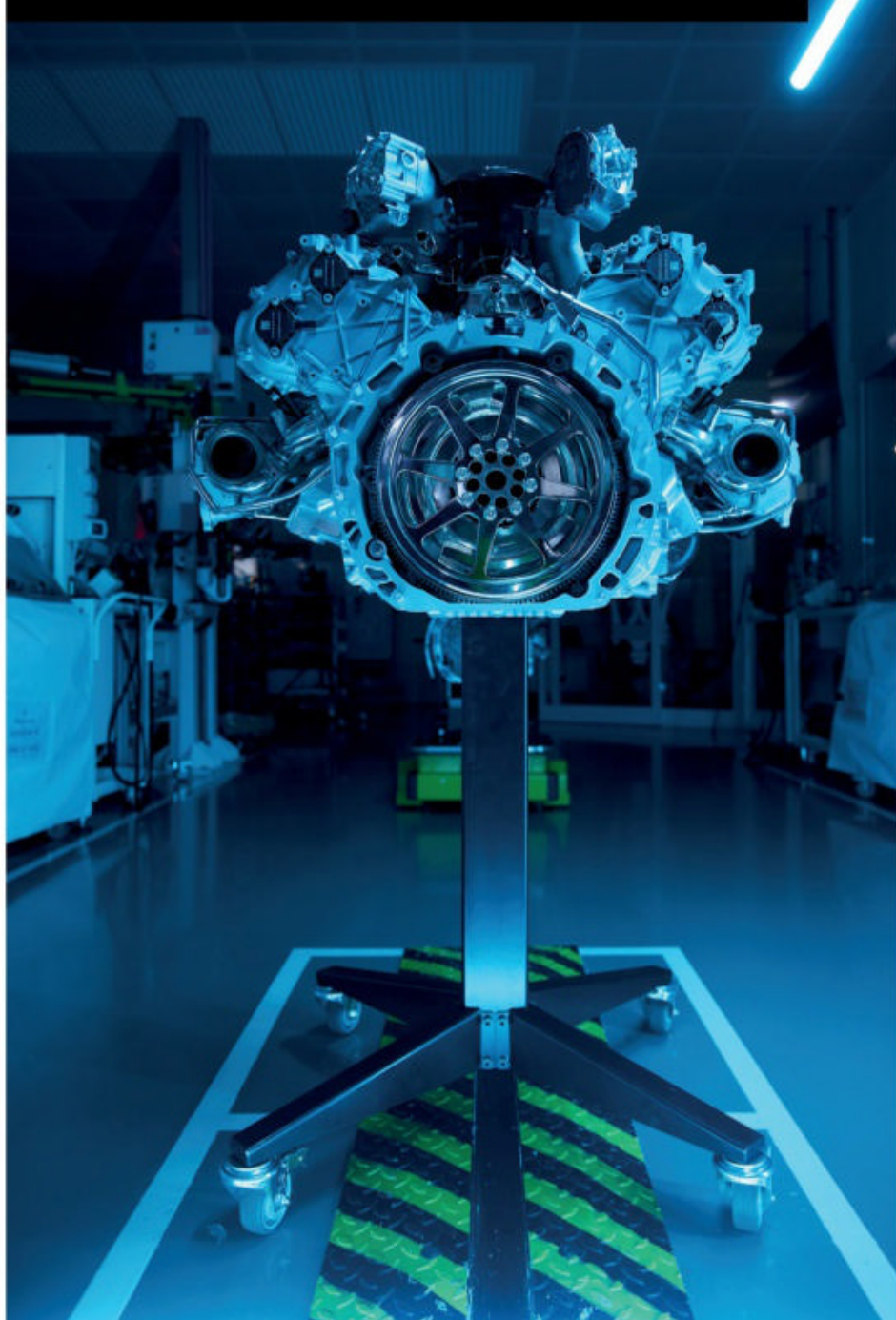
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Formula 1 ignition technology has found its way into road cars with the Nettuno engine in the Maserati MC20



when further developed by the Mahle company, turbulent jet ignition.

Logically, a small injector would be used to introduce a tiny quantity of fuel into the pre-chamber and then a larger injector would inject the majority of the fuel into the cylinder where it would be ignited by the plasma jets shooting out of the pre-chamber. This arrangement is known as an active pre-chamber.

Unfortunately, F1 regulations only allowed one injector per cylinder and so that injector, which was positioned in the cylinder head, had to be arranged so that it sprayed a small amount of fuel into the pre-chamber via one or more of the holes. This entailed very precise positioning of the spark plug with its attached pre-chamber, but once the geometry had been developed it led to a very effective system.

It is widely acknowledged that Mercedes was the first to run this in an F1 engine, but Ferrari was not far behind, introducing its own system for the 2015 Canadian GP where rivals noted a distinct upturn in the performance of the works Ferrari engine.

WHEN THE PRE-CHAMBER WAS FIRST INTRODUCED IT PROBABLY INSTANTLY ADDED OVER 20BHP, AND THIS IS LIKELY TO HAVE INCREASED

It is rare in engine development for a single upgrade to make a significant difference in power. I can remember the days when exotic fuels were allowed – we were literally able to pour in a significant increase in power – and in the early turbo days the power was directly proportional to the amount of boost you could run without the engine destroying itself.

The pre-chamber is different. This is a device that improves the combustion and is therefore fundamental to both power and efficiency. When

first introduced it probably instantly added over 20bhp, and during the early phase of development this is likely to have increased substantially.

This technology has already found its way into road cars with the system used in the Nettuno engine in the Maserati MC20. This claims to improve fuel economy by 3% for the relatively minor cost of €150 per engine. Other manufacturers are working on similar systems – yet another example of F1 engineering rolling down into production cars for the benefit of all.

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STRAIGHT TALK

MARK GALLAGHER

[@_markgallagher](#)

you opt for,” came the reply. Upon which I was handed a layout of the media centre showing which desks were free. The answer was ‘most’.

It’s still early days when it comes to international travel; this is not everyone’s cup of tea, given the additional paperwork required and the requisite COVID testing that still remains for certain countries – Australia included.

Journalist Joe Saward who, along with long-time F1 freelancer Adam Cooper, has somehow braved COVID-afflicted travel to attend each grand prix during the pandemic explained “this is how it is now”.

Fewer journalists are able, willing or (frankly) allowed to travel to every race thanks to the cumulative effect of the pandemic, burgeoning calendar and sheer cost involved of covering a world championship that has pivoted far beyond its European heartlands. Some don’t much want to visit the countries now hosting grands prix.

What this means is that Formula 1 fans are increasingly being served by media (*not this title – ed!*) who are not actually in attendance, relying on live video, data and timing feeds to which they add their layer of expertise and insight.

Thus, we have the pitlane reporter throwing back to commentators who are essentially watching TV and the pundit who appears on a live broadcast while sitting at home in Monaco...

In Melbourne I sat through a press conference and watched the questions being placed from journalists at home in Europe. The connected world has been supercharged by the effects of the pandemic.

It’s quite cool and so economical, plus it helps reduce your carbon footprint when the only travel you do is to sit in front of your computer in the spare room influencing fans. But it does raise an important question about the extent to which the media’s ability to provide genuine insight, to build relationships with drivers, engineers and team bosses, is being diluted, even harmed.

The late, great Murray Walker used to wander into hospitality units for a morning coffee, chat to the technical director, have a word with the team principal and then disappear with a driver for a proper conversation. His ability to communicate Formula 1 went far beyond the carefully curated words of a press release or the limitations of the group interview.

His true successor Martin Brundle (*himself reducing his own travel burden these days – ed*) takes the same approach. He knows far more than the viewer ever will. It remains vital that the wider media does not lose its paddock connections. Nor its ability to interrogate them face to face.

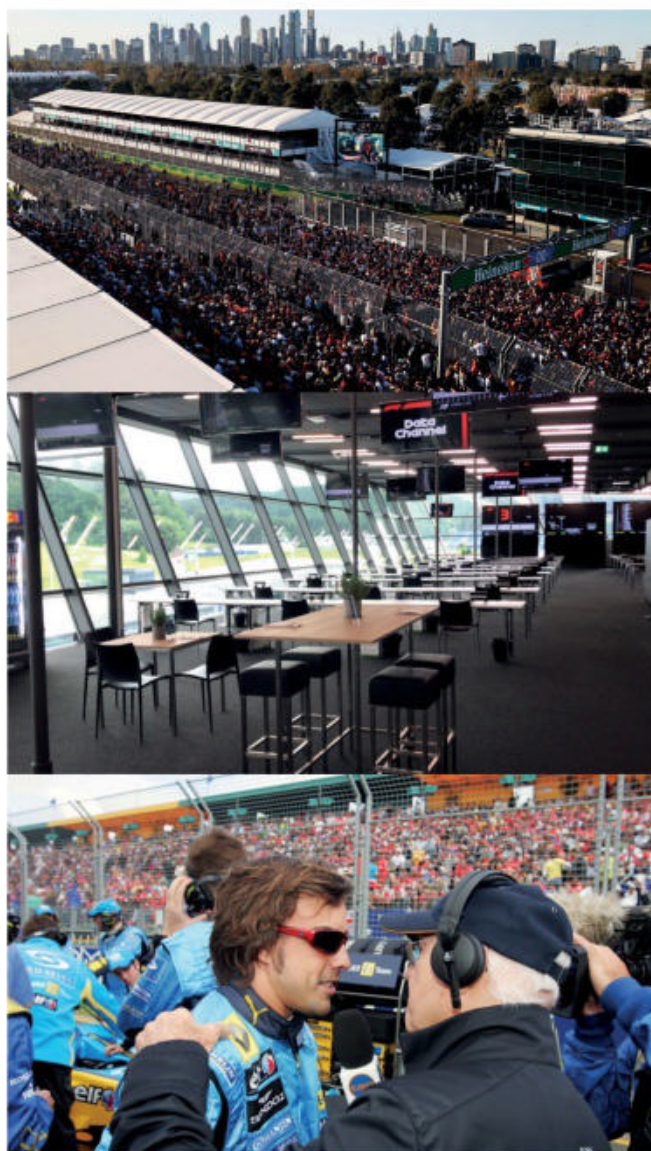
REMOTE ACCESS WON’T GIVE THE WHOLE STORY

Watching Formula 1’s return to Melbourne was fun. What with two years of cancellations and postponements it had been three years since Aussie fans had been able to cheer Daniel Ricciardo on his way and luxuriate amid the spectacle of grand prix motor racing.

They returned in their droves – 420,000 over the full race weekend – and the buzz was infectious. There was a sense of celebration, of the world returning to normal – or rather the ‘new normal’ – for Formula 1, which has been permanently changed by the pandemic.

Remote working is not entirely new to F1 – teams have been running strategy rooms back at their factories for years – but the pandemic has created a new reality, one in which the grandstands, hospitality units and merchandise stalls are full but the international media centre is almost empty.

When I checked in on Friday morning, a few hours before first practice, I asked the super-friendly reception staff where I should sit. “Anywhere you like, just let us know which desk



Crowds (top) have returned to normal but almost empty media rooms, common in 2020 (middle), still prevail. The insights Murray Walker (above) gave were only possible by being there...

THIS MONTH

Oliver
Steil

CEO, TeamViewer AG

Remote working has become commonplace during the course of the coronavirus pandemic but Mercedes partner TeamViewer has been offering remote connectivity solutions to industry since 2005.

The German company deploys a range of services which help the Brackley-based squad to remotely access, support and communicate with its race team, creating a powerful showcase in the process

CV

2018-present

CEO, TeamViewer

2015 - 2017

Partner, Head of

Portfolio Group

Permira

2010 - 2013

CEO, Sunrise

Communications AG

2009 - 2010

Partner

McKinsey & Company

2006 - 2008

CEO/Chief

Commercial Officer

Mobilcom-Debitel

GMBH

1998 - 2006

Partner

McKinsey & Company

1997 - 1998

Research assistant

Aachen University

GP Racing: It's clear the world of communications and connectivity is a thread running through your career. How did that journey begin?

Oliver Steil: It started with studying engineering at school and then electrical engineering. At the time it was the beginning of mobile telecommunications with what we know now as 2G – the first generation after bulky analogue telephones. I went into telecoms because of that and after my degree I went to another university to do postgraduate research on the coding algorithms for phones, trying to get very high-quality speech into the old telephone signal.

GPR: There were two stints at McKinsey [a consultancy firm], so how did that lead to executive roles across telecoms and then into the senior leadership position at TeamViewer?

OS: When you join McKinsey as an engineer it is always very likely that they will put you onto project engineering. My project was a large German technology conglomerate where I was studying IT hardware, software services and the like. I did two stints in telecoms companies and my experience of working with private equity, operations and consulting made me quite interesting to Permira where I eventually had executive oversight of 30 portfolio companies.

GPR: Through Permira [an investment firm] you then met and got involved with TeamViewer, becoming CEO in 2018. It appears TeamViewer was ideally placed to take advantage of the remote working revolution brought about by COVID?

OS: Yes, TeamViewer was a software offering remote support to help solve computer problems effectively. We found there is so much more that people can do remotely, so we started to broaden our portfolio, acquired a few companies, adding more and more services. We IPO'd in 2019, listing in Frankfurt, and then COVID started which was a massive accelerator for our business in 2020.

GPR: This brings us to your deal with the Mercedes F1 team, where it uses your company's capabilities to help run its complex operations worldwide. How did that develop?

INTERVIEW
MARK
GALLAGHER

OS: Mercedes was like many companies but with a race here, a factory there, asking, "We cannot travel, we want to maintain our operations, what can we do?" It became a TeamViewer customer and at the beginning of 2021 I got an approach saying,

"You know, we thought about whether you could become our sponsor because we know TeamViewer, we know it inside out, you are a technology partner, you're crucial to what we did during the pandemic." We had already thought about moving into more branding, we had also looked at sports, so when the chance came with Mercedes it was fantastic.

GPR: Tell us about the Mercedes case study from a TeamViewer perspective, spanning F1 and Formula E?

OS: The attractive bit of that approach from Mercedes was "OK, you use us, you have all these case studies, you're operating between a central location where you have all these competencies and where you can do innovation and improvements, and you're travelling the world, so you have remote operations." The second point is the connectivity to machinery. You have the wind tunnel, for example. To be able to maximise the use of it, you better have connectivity, so you can log into the system and see what's happening. The third point, which is where we're experimenting in Formula E, is the augmented reality glasses where you have somebody working and you can see what they see, and have a live dialogue with videos, annotations and text.

GPR: What role can a company like TeamViewer play in helping a sport like F1 achieve its net zero emissions target?

OS: When we look at the agendas of our customers it's one big element – with less travel, less movement of goods, more use of local talent. That has a very significant carbon reduction effect because travel is very significant. We did a study around it and I think it's 37 megatons of carbon emissions our customers have already reduced – like flying 7000 times from Singapore to New York return. Our mission is to create a world that works better. It's fundamentally motivating our own people – we build software that works everywhere and we are doing something good.





VERSTAPPEN

RED BULL

VERSUS

LECLERC

FERRARI

WORDS STUART COOLING

PICTURES  **motorsport**
IMAGES

For the first time in a decade, Red Bull and Ferrari are properly fighting it out for the world championship – and the duelling drivers are children of the 1990s who are picking up a similarly old grudge match from where they left off...

BATTLE RENEWED!



“WE WERE YOUNG, CRAZY – AND, YEAH, WE HATED EACH OTHER AT THAT MOMENT...”

Charles Leclerc is reflecting on one of many historic karting battles with Max Verstappen – one which has surfaced again as their intertwined careers have brought them back to face each other at the pinnacle of motorsport.

Max’s fast-track trajectory to Formula 1 took him out of sync with Charles on the junior single-seater ladder, and Ferrari’s wayward form has restricted the opportunities for them to lay claim to the same stretch of track again since Leclerc joined the F1 grid. But historic rancour has a habit of bobbing back to the surface in an age when nothing can be forgotten, merely consigned to some distant cloud-based server waiting to be rediscovered.

When Verstappen ushered Leclerc off-track while fighting for the lead of the 2019 Austrian Grand Prix – robbing Charles of what would have been his maiden F1 win after an engine issue denied him victory in Bahrain – a rough-and-ready video from their karting days surfaced online and, as the saying goes, ‘went viral’. It began to do the rounds again after the opening rounds of the 2022 season when it became clear one of these two drivers would likely be the champion.

There is a pleasing symmetry to the proceedings, for the video hails from 2012, the last time Ferrari meaningfully faced off against Red Bull in a battle for world championship honours. The rivalry between Leclerc and Verstappen was nothing new even then, for the prodigious Max had established himself as the guy to beat in 2010 before Leclerc found his feet at international level the following year. The video charts the aftermath of a relatively

inconsequential heat during the second round of the 2012 WSK Euro Series at the Circuit du Val d’Argenton, during which the two 14-year-olds repeatedly clashed before Charles biffed Max off-track into the mud after the finishing line. This is unseen; the video only exists because the journalists raced to the scene, expecting Max’s notoriously combustible father Jos to kick off. What delights modern viewers is that the youngsters’ more recent roles are reversed: it’s Max who rages “it’s not fair” while Charles adopts a cherubic poker face as he writes the incident off as “nothing, just an incident in the race”.

It’s incredible to think that Max was just two and a half years away from his first F1 test with Toro Rosso at this point, while Charles faced a longer route to the top – even with the support of Nicolas Todt’s All Road Management and its allied ART Grand Prix organisation.

“In karting we had a lot of conflicts,” recalls Leclerc. “Yeah, really a lot. We’d been racing

together for four or five years, every race we would be fighting for wins, and obviously loads of things happened.

“But we’ve grown, we’ve more experience, and we’ve also both realised our dream to be fighting for the F1 championship, so the relationship has changed since then. Now I think we both look back to these years with smiles on our faces.”

This amicable situation may not prevail for long. It’s about to get spicy – and not just between these two drivers.

FERRARI VS RED BULL – IT’S REAL

Not since 2012, when Leclerc and Verstappen were figuratively coming to blows on the karting scene, have Ferrari and Red Bull engaged in a genuine season-long scrap for the world championship. Although Fernando Alonso was again runner-up to Sebastian Vettel in 2013 the Red Bull was quantifiably the superior car, especially after Pirelli was forced to revert to its previous tyre construction mid-season.



Karting days: Verstappen and father Jos (above) and Leclerc (left). Max and Charles are now going head-to-head in Formula 1 and, at the moment, there seems to be no rancour between them (right)

Since then it’s been a case of revolving doors as each team has undergone periodic renaissances in which they have occasionally challenged Mercedes’ dominance, but seldom at the same time. Only in 2019 was synchronicity achieved, and then in a battle for the runner-up position behind Mercedes as Lewis Hamilton clinched the title (from his team-mate) with two rounds to go.

Both teams underachieved in the early years of the hybrid era, publicly blaming power unit ▶





deficiencies for their problems while also carrying significant shortcomings on the aerodynamics and chassis side. Only in acknowledging and addressing these wider issues have they got to where they are now.

Ferrari's restructured technical team delivered

EVEN THE PRESENT PERIOD OF RELATIVE HARMONY BETWEEN THE COMPETITORS CAN PROVIDE GROUNDS FOR RANCOUR

a strong car and engine for the widebody era – perhaps too strong, since the team's power unit was the subject of a mysterious investigation and “confidential settlement” with the FIA which paved the way for its 2020 slump. There were

problems with management, too, solved by firing the abrasive team principal Maurizio Arrivabene in favour of former technical chief Mattia Binotto.

The transformative effect of Binotto – with support from further up the Ferrari food chain – cannot be underestimated. Shielded from the worst effects of the impatience of fans and the Italian national media, Ferrari's technical team – restructured again, but on sensible lines rather than an orgy of hiring and

firing – has been able to reconcile itself to two relatively uncompetitive years while focusing all its efforts on building a better car for the new regulations brought in this season.

Trackside operations have been bolstered

too through internal promotions, enabling Binotto to step back from his race weekend role several times last year to superintend work on the F1-75. The result has been Ferrari's best start to a season since 2018.

Red Bull's challenge was to break out of a pattern in which it would start the year with a sub-optimal car, then be forced to throw resources at in-season development – thereby starving the next season's car of attention and perpetuating the loop. As recently as 2020 the team's technical package hadn't really hit its stride until the final races of the year.

Part of that is down to the team leadership's policy of allowing tech guru Adrian Newey to step away and engage in side projects (most recently the Red Bull-Aston Martin Valkyrie supercar) during his occasional periods of disenchantment with F1. Some can be accounted for by the reliability of the increasingly powerful, but still



Team principals Binotto (left) and Horner. There is a lack of needle between the two so far, unlike some of the tense exchanges between Horner and Mercedes boss Toto Wolff in recent seasons



2012 was the last time Red Bull and Ferrari were battling for the world title, with Vettel and Alonso slugging it out for honours

often fragile, Honda powertrain.

But Red Bull's key weakness in recent years has been a loss of correlation between simulation and real-life car behaviour. New parts weren't delivering the performance characteristics suggested by the windtunnel and computational fluid dynamics (CFD) tools, forcing Red Bull to troubleshoot trackside (10 years ago, similar issues forced Ferrari to hire Toyota's facility in Cologne while it rebuilt its own windtunnel). After winning the 2020 season finale in Abu Dhabi, Verstappen said, "We have to find a way of making sure that what comes out of the windtunnel works straight away on the car, and it's immediate, and puts us in the right direction."

When the COVID pandemic enforced a delayed start to the new technical regulations, Red Bull gained a year's grace in which it could identify its windtunnel issues, finesse the troubled 2020 car into a championship-winning B-spec, and target

a flying start to 2022. Thanks to this, plus a fully focused Adrian Newey, and Honda's best hybrid power unit yet, it has accomplished all three.

The position as we complete the first quarter of the season is one of delicate balance on the technical front. Ferrari has targeted cornering performance and driveability, and the F1-75 chassis and new power unit appear to have met all the required benchmarks. But Honda and Red Bull have found greater straightline speed through a less draggy car and a power unit which offers more electrical deployment at the top end. At the Miami GP weekend Binotto estimated the RB18 was perhaps 0.2s a lap quicker on average.

THE POLITICS HAVE BEGUN ALREADY

Back in 2012 seven different drivers won the first seven rounds and Ferrari had to resort to skulduggery as Vettel overhauled Alonso in the points late on, such as deliberately breaking a seal on Felipe Massa's gearbox to promote Alonso – who had underperformed in qualifying – to the grippier side of the grid for the US GP. Conflict between the two teams escalated off-track as well as Ferrari (and others) lobbied the FIA to close off engine-mapping loopholes Red Bull and Renault were exploiting to boost aero performance, improve traction during starts, and boost driveability in low-grip conditions.

F1's new era of cost controls and an engineering-led, more rigorously thought-out set of technical regulations means we are unlikely to witness scenes similar to the worst excesses of a decade ago. Ferrari's previous title battle with Red Bull was punctuated by wrangles about tyres, engine mapping, exhaust siting and the spec of cars used in tyre tests and 'filming days'. But even the present period of relative harmony between the competitors can provide grounds for rancour, as evinced by the animosity between Red Bull team principal Christian Horner and his Mercedes counterpart Toto Wolff in recent seasons.

"Mattia is a nice guy," responds Horner pointedly when *GP Racing* asks him if fighting Ferrari rather than Mercedes will entail a different dynamic.

"It's just a different sort of competition... Last year there was a lot of needle, a lot going on off-track, whereas this season seems more focused about what's going on on-track. And I think the racing has been great between Charles and Max. ▶

“And if that continues through the season, inevitably it’s going to boil over at some point.”

The key battleground for this season will be performance upgrades and how they fit into the budget cap. Already suspicions are forming.

Aside from a new floor in pre-season testing, and a ‘depowered’ low-drag rear wing evaluated in Miami, Ferrari held back on upgrading the F1-75 until Barcelona. The official reasoning has been budget, and a focus on understanding the base package – hence in Melbourne Leclerc evaluated a different diffuser configuration which required only a temporary change (but has now been permanently enshrined in the new, lighter floor introduced in Spain). It’s a measure of how the paranoia levels are growing, though, that so



Xevi Pujolar worked with Leclerc at Alfa Romeo (above, left), and was Verstappen’s first race engineer in F1 at Toro Rosso (above, right). He reveals that they are both completely different characters



much excitement and intrigue greeted reports from Italy that Ferrari used two different floor designs during the post-Imola tyre test. The FIA investigated and accepted Ferrari’s rationale that the floor had been damaged by a kerb strike in the

morning and replaced with a launch-spec item.

By contrast, Red Bull seems to have followed a programme of continuous development: new sidepod and floor during Bahrain testing, new rear beam wing in Saudi Arabia, new front-wing endplates in Australia, another new floor for Imola, and a host of weight-saving modifications for Miami and Barcelona. This has led to speculation about how it can spend so much on upgrades while remaining within the budget cap.

“I hope at some stage Red Bull will stop developing,” says Binotto. “Otherwise I would not understand how they can do that...”

THE KEY BATTLEGROUND FOR THIS SEASON WILL BE PERFORMANCE UPGRADES AND HOW THEY FIT INTO THE BUDGET CAP. ALREADY SUSPICIONS ARE FORMING





The two discuss Leclerc's pole at the 2019 Austrian GP (above) but in the race came the first real F1 flashpoint between them (left)

While Binotto has a point, much of the work – such as the floor revisions – has been structural to prioritise weight saving, and concerned items such as carbonfibre lay-up patterns and metal strengthening components. While these come with a cost attached for materials and labour, this isn't as expensive as windtunnel research.

It's understood the RB18 was at least 10kgs over the 798kg minimum weight limit at the start of the season, hence the urgency. The F1-75 is also believed to be slightly overweight; insiders say a new-spec paint used from Spain onwards saves nearly a kilo. Likewise Red Bull is drilling out metal components to reduce bulk where it can.

Red Bull's defence has been to claim Ferrari has been unable to spend money on development because of costs associated with accident damage. All teams need to set aside money within the

budget cap to pay for new components. Asked by GP Racing's sister website *motorsport.com* about reports Red Bull had already spent 75% of its development budget for the season, the team's 'driver advisor' Dr Helmut Marko harrumphed: "The numbers are nonsense.

"I don't think we're in a significantly different position than Ferrari in this regard. Especially since I wonder what effect it has on them that Carlos Sainz has already crashed the car several times. That can't be cheap."

MAX VS CHARLES – WHO WILL WIN?

Both Leclerc and Verstappen are blindingly quick – arguably the most talented drivers of the generation born in the late 1990s – but they have

very different temperaments. While it's often claimed Max is the more focused and industrious of the two, Charles slightly inclined to coast on talent – and that working with the meticulous Carlos Sainz has enabled him to improve in key technical areas – those who have worked with both of them have a more nuanced view..

"Both of them, they are very competitive with themselves – they're fighting against themselves before they fight anyone else," says Xevi Pujolar, who was Max's first race engineer in F1 (at Toro Rosso) and worked with Charles at Alfa Romeo.

"It wasn't just after the race or qualifying, it was after every session. Max wanted to dig in to all the details to find what he needed to take the car to the next level – tyre, chassis, engine. And then his ability to push everyone in the team, because he's very competitive and he wants everyone to be as competitive as him. Charles is also like this, but they do it in very different styles – and I won't say if either one is better or worse, it's just different."

"Max is pushing everything to the limit in quite a raw way, and sometimes you've probably seen this from outside. For some people Max is more difficult to accept because sometimes he's too much. Charles is a bit... smoother.


"They are very different characters, almost opposite. Charles is very calm, Max almost wild."

It is this difference in temperament which may tell in the months to come. Leclerc is a driver who requires a support network around him to deliver of his best. Verstappen is very much a product of his somewhat peculiar upbringing.

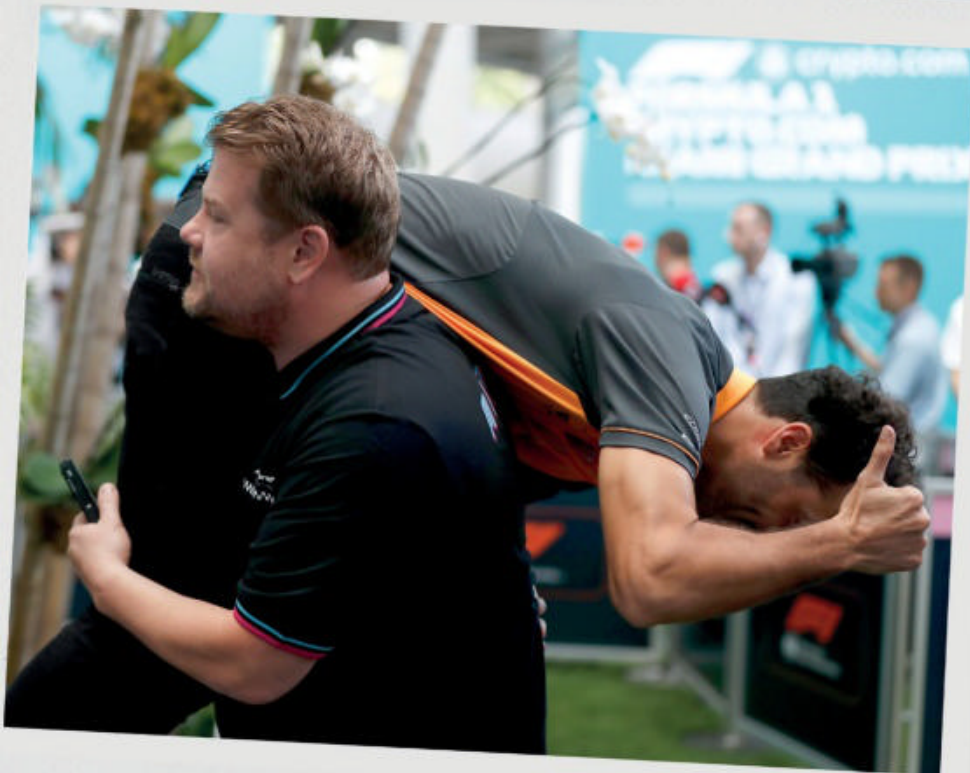
Max has spoken frankly about the tough-love process which shaped him into a world champion. In one instance his father was so furious at him crashing in a kart race – aged 14 – that he abandoned him at a service station on the way home and then, having returned to collect Max, spent the remainder of the 17-hour journey in an unspeaking funk.

Call it child abuse if you will, it has made Max the uniquely single-minded winning machine he is.

"I'm sure the product you have now is a result of what he went through when he was karting," says Pujolar. "For me he is the best out there. He's the most robust, strong driver I've ever met. Charles is very competitive but at some point I can see him getting a bit more... intimidated..."

"Let's put it this way. In the perfect conditions, Charles can be close to Max. But Max will be there anyway – because he's a warrior, an animal. I don't see anyone able to compete with him. The guy has no limits – it's either him or nothing." 

Clockwise: Corden, Beckham, NFL star Dan Marino, both Williams sisters, Hilton and Jordan were all at the first Miami GP



MIAMI NICE

Home to many a cinematic car chase, Miami has made a visually dramatic impact on the F1 calendar too – as one wag put it, they paved a parking lot and put up a paradise. *GP Racing* was on the scene to sample a world of celebrities, fake marinas and imperilled six-foot iguanas...

WORDS STUART COOLING PICTURES 

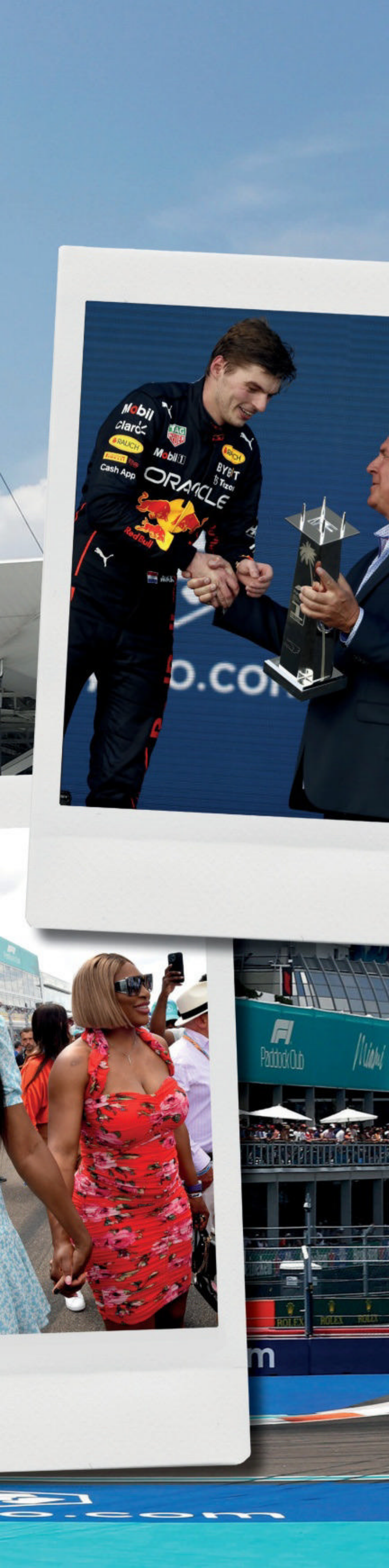
“You’re here for the Formula 1, huh?”

Angel, *GP Racing*’s Uber driver, doesn’t miss a trick as he threads his Honda CR-V along the I-95 Expressway, deftly avoiding the polarised extremes of Miami traffic: bovine doziness at one end, throttle-blipping, lane-swapping perma-frenzy at the other.

“I looked at tickets on resale, they’re going at

\$1000 minimum – for Saturday...”

Miami sprawls for miles in all directions like a *Sim City* game gone rogue, a predominantly low-rise horizon bounded by the sea to the east and petering out into the Everglades National Park to the west and south, where the wetlands stand as an obstinate impasse to the further pouring of ▶



concrete. Little wonder the denizens of the city's highways are seemingly in either no hurry at all to reach their destinations, or hell-bent on re-enacting scenes from *The Fast & The Furious*. Angel is an outlier in this territory although, in the coming days, *GP Racing* is destined to be conveyed by some interesting characters – including one dressed like an extra from *Sons of Anarchy* who responds to a dawdling police car baulking him by leaning on the horn with his right hand while flipping the officers off through the open window with his left.

All year round, tourists flock to this metropolis on Florida's southern tip to enjoy the art deco architecture of South Beach, the miles of sand and seemingly endless sunshine; and tens of thousands of college students gravitate here during the infamous spring break, a scene now so debauched that Miami Beach's mayor declared a state of emergency last March. Few popular entertainments have captured the look, vibe and ethos of their setting quite so well as the 1980s TV series *Miami Vice*, in which a pair of incongruously well-dressed detectives tackled the city's seedy underbelly – while scooting around in Ferraris. Famously, the Daytona driven by Don Johnson's character was a fake (how perfectly Miami!); after receiving a cease-and-desist notice from Ferrari, producer Michael Mann negotiated a pair of real ones, since Enzo Ferrari was apparently a fan of the show.

Nightly patrols were undertaken to ensure the local green iguanas hadn't sneaked onto the circuit



There was no need for *Miami Vice* fake Ferraris on the South Beach boulevard when F1 came to town

"I proposed that they let us use the new Testarossa," Mann later told *The Hollywood Reporter* "and that I needed it in white to fit in with the Miami palette."

The Miami Grand Prix is a more high-profile affair than F1's last visit to the Sunshine State, for the inaugural US GP at Sebring in 1959. F1 has struggled to crack America since the world championship's inception in 1950, when the inclusion of the Indy 500 as a points-scoring round failed to spur much interest on either side. Its subsequent tour of US racing venues is a sorry tale of absent crowds, bankrupt promoters and F1 shooting itself in the foot. Even the now-profitable US GP at the Circuit of The Americas barely washed its face for the first few years: former F1 'ringmaster' Bernie Ecclestone famously told COTA chairman Bobby Epstein, "I don't care so long as your cheque clears".

Now Formula 1 is on the verge of shoehorning three US races onto the calendar, since Las Vegas will be joining Miami next year. Netflix's *Drive to Survive* is popularly held to be responsible for transforming America's F1 apathy into appetite. That's certainly how it appeared on Angel's radar: like many new fans he binge-watched the show while business was slack during the early months of the pandemic. While many long-time fans declaim the artifice involved in cutting-and-shutting reality to shape a TV-ready narrative, it's putting bums on seats ▶

The whole event kicked off with the grandly named 'Opening Party' on the Wednesday evening





The infamous 'fake' marina grabbed a lot of attention but may not be around next year



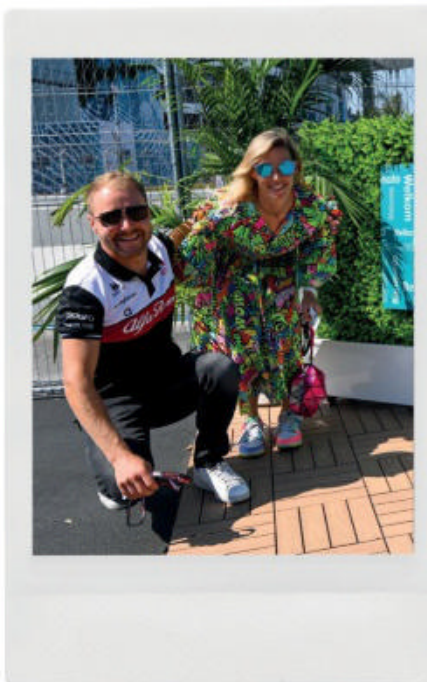


and sponsorship stickers on cars. Miami, a city knowingly high on the tackiness factor, is part of that thrust. Get ready for the spring breakification of F1.

Ahead of the race weekend Bloomberg published a sneering op-ed headlined “Formula One Finally Found a Way to Get Americans to Care”, whose contents were as hit-and-miss as the headline writer’s rigour with regard to capitalisation. The subhead encapsulated where the author was going: “The posh, stodgy European sport has been transformed for the US with a hit Netflix series, race car drivers on Twitch, and a Miami-meets-Vegas overhaul – and it’s working.”

Real estate magnate Stephen M Ross originally envisaged the Miami Grand Prix on a street layout around Bayfront Park in the downtown area, with the famous art deco residences of South Beach almost within sight over Biscayne Bay. Residents and local authorities saw that off so ‘Plan B’ took shape around the campus of the Hard Rock Stadium, home of the Miami Dolphins NFL team, both owned by Ross. It is 13 miles north of Miami itself, in Miami Gardens, one of the cities-within-a-city which makes up this sprawling metropolis. Here Ross has also faced opposition, for this is a majority African-American area whose leaders objected to the development on the grounds that the community would receive disproportionately low rewards from hosting the grand prix – just 5% of the revenues from an event which is now expected to make a loss in its first year.

As we idle in stop-start traffic a mile or so from the stadium, we pass identikit low-rise shopping malls fringed with fast-food emporia, half a dozen Bitcoin ATMs, and the Miami-Dade Police Department’s professional compliance bureau. The media accreditation centre is in a partitioned-off area within a 24 Hour Fitness gym, the denizens of which cleave to Clive James’s

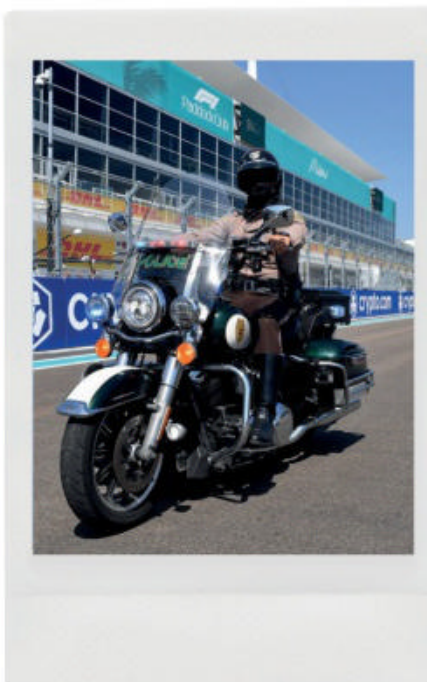


Valtteri Bottas’s girlfriend Tiffany Cromwell was spotted in the paddock, but only just...

memorable description of Arnold Schwarzenegger looking like “a condom stuffed with walnuts”. Out front, around the access roads to the parking lot, a line of cars and trucks snakes towards a Drive-Thru Starbucks, the attached walk-in café of which is closed owing to the non-arrival of today’s food delivery. *GP Racing* bags the last blueberry muffin in town.

Not quite in the shadow of the Hard Rock Stadium itself, the F1 paddock swelters in 31C heat and oh-the-humidity. Not that this has put off the hordes wielding VIP

The Miami-Dade Police Department decided to show off some of its own machinery



passes: not since the pre-pandemic days has the paddock heaved with humanity thus, eyeballs swivelling in the hope of sighting a celeb. And the chances of that are high. In recent days Lewis Hamilton has been photographed playing golf with Tampa Bay Buccaneers and seven-time Superbowl-winning quarterback Tom Brady, a guest of Mercedes along with Star Wars creator George Lucas and former first lady Michelle Obama. Charles Leclerc hung out with the Marlins players before their Major League Baseball match against the D-Backs on Tuesday night, playing catch with outfielder Avisail García pre-match and swapping shirts with second baseman Jazz Chisholm Jr. In the McLaren garage James Corden is larking around with a curiously garbed Daniel Ricciardo and Lando Norris. Dwayne ‘The Rock’ Johnson, Michael Jordan, the Williams sisters, Paris Hilton, LeBron James, Ryan Reynolds, Renée Zellweger, and Matt Damon are just a few of the stars also expected to swipe through the gates, with former Miami Dolphins NFL star Dan Marino handing out the trophies.

Motor racing is not unknown to Miami. There’s an oval in nearby Homestead, scene of NASCAR and IndyCar races in recent decades. From 1983-1993 Bicentennial Park, near the originally proposed GP site, hosted IMSA sportscar races – whose competitors included local drug smugglers Dale and Don Whittington, later busted in the CIA’s ‘Operation Sunburn’. But while this is very much a VIP grand prix – the majority of trackside stands are hospitality enclosures rather than bleachers – it’s being heavily promoted, from signage in the airport to roadside billboards and wall-to-wall TV coverage in the run-up. Such tickets as were on sale, as well as those channelled straight to corporate entertainers, were snapped up quickly.

Although the circuit is temporary, much of the infrastructure added for the GP will be permanent and that ▶

AD-VANTAGE HULK



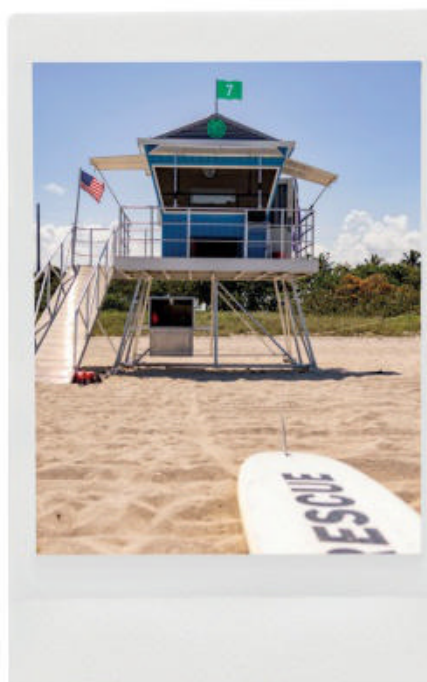
desire fed in to the circuit design, which went through a number of iterations. The pits were originally envisaged as a temporary facility to be located by the plaza entrance from North West 199th Street. Venue owner Stephen Ross decided a permanent structure which could serve other purposes for the rest of the year would offer a better return on investment. The pit/garage complex was relocated along the north flank of the stadium and will accommodate local food outlets during football games, for instance.

From inside the track it's very difficult to envisage the day-to-day existence of much of the site as a car park. This was a deliberate decision on the part of the promoter: nobody, least of all the current commercial rights holder, for which the Miami GP has been a much-prized goal, wanted the event to be freighted with reminders of the infamously jejune Caesar's Palace circuit. To keep good neighbourly relations the organisers planned the surfacing work in stages, particularly where it would

involve closures of Don Shula Drive and Carl F Barger Boulevard, public roads which traverse the campus and offer access to the nearby I-95. They also tried to be creative in terms of the trackside furniture and hospitality enclosures... with polarising results.

When news of the so-called 'fake marina' overlooking Turn 7 percolated through social media it was inevitably greeted with derision by those regarding affairs from afar. It was lampooned on site, too, although a *Sky Sports* reporter who was caught being photographed while pretending to swim in it was given a fearful dressing down by security. During *GP Racing's* track tour we're informed that each of the boats was transported carefully, overnight, from the harbour so as to minimise disruption on the roads. No wonder the organisers were on the defensive.

"We don't take ourselves too seriously," says Miami GP COO Tyler Epp when asked if the area will be remodelled with a real water feature come 2023: "It was always



Miami is famous for its beach culture, miles and miles of sand, and sunshine on tap

meant to focus on the customer experience, and I'd guess I'd say that if our customers and fans tell us this isn't a good experience for them, maybe we'll think about working through that. We certainly respect people's opinion but, at this point, that's not what we're hearing. The marina is a fantastic area and we've got great feedback from people who have been in that place."


Besides rogue TV reporters, security has to be mindful of another invasive species: green iguanas which generally inhabit the nearby Snake Creek, but which also enjoy climbing the many trees which have been planted to 'greenify' the campus. Ross was adamant that none of the trees

should be cut down to accommodate the new track, so on a nightly basis iguana wranglers are despatched to ensure none of the lizards (which can weigh nine kilos or more) have taken up residence in the trees which overhang the circuit.

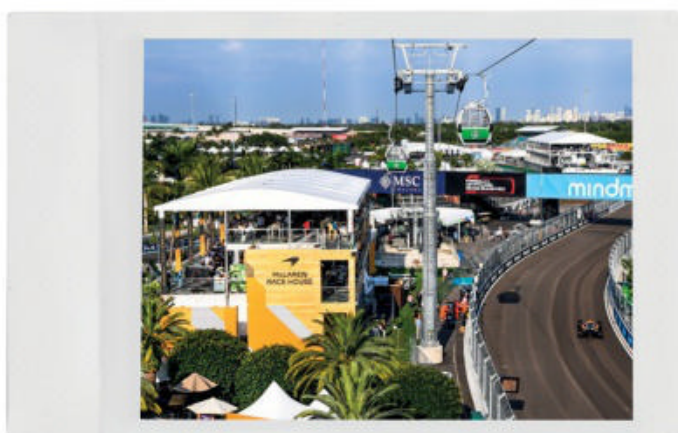
Tacky though some elements are, the Miami GP experience is in keeping with the vibe of the city and with Liberty Media's stated aim of imbuing each race weekend with a Superbowl-style distinctiveness. It hasn't impressed the former commercial rights holder, though.

"They're producing *Formula 1: American Style*," harrumphs Bernie Ecclestone. "It may well be that it's good, because so many stupid things come out of America and everyone's happy, but it wasn't the way I ran things."

That might be true, Bernie, but things aren't what they were: they're what they are. And, while costs have escalated to the point that the inaugural Miami GP won't make a profit – and well-publicised misfires in hospitality early in the weekend might make corporate entertainment a harder sell next year – perhaps this event acts as a pointer to F1's future. A direction of travel in which the racing comes to the city rather than expecting fans to trek to purpose-built venues miles from anywhere.

"Bernie can mouth off all he wants," says Greg Maffei, Liberty's CEO. "But the reality is, everybody wants in now." 

McLaren embraced the event fully, with the McLaren Race House next to the gondola cable cars at Turns 9 and 10



Sunday morning in Miami and the phone buzzes with a message bearing an unmissable invitation from Aston Martin: would *GP Racing* like to have a 'hot lap' of the circuit with Nico Hülkenberg? Well – does James Bond own a tuxedo?

In case anyone present on the grid thought the sky was missing a graduated tint, next in line behind us is director Michael Bay, surrounded by a camera crew. Opa-locka Airport, where Bay shot the climactic sequence of his feature debut *Bad Boys*, is but five miles away as the private jet flies.

"Ah! A journalist," cackles Nico as he recognises his passenger.

"You've got Michael Bay next. Are you planning on auditioning?"

In hindsight this interjection would have been

better dropped in favour of something useful, such as whether this Vantage is the V8 or V12 model, for The Hülk's response is to floor the throttle and screech away with the intention of scaring his passenger half to death. Or perhaps, judging by the glorious beat of the engine as it rises to full chat, Nico is non-verbally signalling that it's the V8.

As we skim the kerbs and walls, the lap validates what the F1 drivers have been saying about the track: on the grippier line it has a nice flow through the opening section, and Turn 7 suckers you in with its wide-open entry and tightening radius. The in-car video reveals Nico's grin as the Vantage's back end snaps out and he gathers it in again with an armful of opposite lock. A McLaren 720S, also on the Pirelli Hot Laps VIP programme, passes us just

after the point where, in a few hours time, Lando Norris will have his whoopsie with Pierre Gasly.

"They've got some performance in that McLaren," says Nico. "Fuckers!"

But the 720S is, indubitably, an ugly car.

The back straight seems never-ending and the Aston touches 145mph before Nico applies the brake pedal at the 150-metre board, evoking a gentle squeal of protest from the tyres. A little over two minutes after setting off, we're back where we started – and, it must be said, in the mood for another lap rather than handing over to the chap who inflicted five *Transformers* movies on the world.

"This isn't 10% of an F1 car in performance and speed," says Nico as he pulls to a halt. We're not sure about his maths, but he certainly can drive...

The podium celebrations were the culmination of an event that definitely grabbed the headlines





FRÉDÉRIC VASSEUR

Alfa Romeo is back in the hunt for regular points finishes, after a couple of difficult seasons. Completely abandoning development of last year's chassis for the sake of 2022's major aerodynamic overhaul looks to have paid off so handsomely it's allowed Valtteri Bottas to be almost as competitive as if he'd stayed at Mercedes...

Fred, are you happier than last year?

Yes. I think we had two good seasons in 2018 and 2019. Then it became a bit more messy. 2020 was a very strange season with COVID, also some of the components of the package didn't perform. And in 2021 we took the decision very early to switch on the 2022 project. Psychologically it was quite difficult, but I think we made a good use of this period, focusing on the operational side. And there was a huge investment in terms of resources and time on 2022. For sure, so far it's going pretty well and yes, I'm quite happy.

You've got a new Finn in the team, Valtteri Bottas, instead of Kimi Räikkönen. How do these two compare?

You can't [compare them]! And I don't want to. They are not at the same stage of their careers. For Valtteri the approach is probably more long-term than it was for Kimi. With Kimi it was crystal clear, when he joined us, that he won't spend the next 10 years in F1. For Valtteri it's more about trying to build something together.

Valtteri is coming from Mercedes, where he was fighting for podiums each weekend. Inevitably there are questions about his motivation.

You are absolutely right. And it was one of the first topics we discussed together. I think we had our first discussion in Baku [last year] and I made clear – and I was wrong! – that “we won't give you a car to fight with Mercedes”. If you start to tell the driver ‘you will win the championship’ and then you are P5 in the first race, it's a disaster. Motivation is bigger when you reach your targets. I think we are more happy with P6 now than Toto [Wolff] was when they took pole positions last

year. I was crystal clear with Valtteri that we have to be back in the top five as a team, and we have to do it step by step. To build something up, coming from P9 to P4 or P5, is a different challenge than to be always P2 and to stay P2. I think he agreed with this, and perhaps found a new motivation.

Does the fact that he's actually fighting with Mercedes bring him even more joy now?

Yes, but I told him from race one that it would be a mistake to focus on this. We are not racing Mercedes. We are not racing [George] Russell, we are doing the best for the team. I prefer to be P2 behind Mercedes than P9 in front of Mercedes. Yes, we are joking sometimes about it, but it's more of a joke than anything else.

Is the team doing better than you expected before the start of the season?

I would say Joe [Zhou Guanyu] is doing much better. The target was Q2, and he is always in Q2. Perfect. The target was to score points, and he scored points.

For the car performance we are almost where I was expecting us to be. We struggled with reliability, and clearly the target is to fix it quickly.

**THERE WAS A HUGE INVESTMENT
IN TERMS OF RESOURCES AND
TIME ON 2022. FOR SURE, SO
FAR IT'S GOING PRETTY WELL**

But everything is going well. We are in a good momentum. For business – it doesn't matter if you are improving or decreasing – very often it's a snowball effect. Now the mood is positive, the motivation at the factory is getting better, sponsors are joining. Every single topic is good.

Speaking of Zhou, were you surprised how bad the reaction was to news that you signed him?

The fact that someone is signing means that someone is not. Yes, we had negative comments, and I think it was completely unfair, because Joe, he did pretty well in F2, he got pole positions, he won races. You don't have to make these kind of bullshit comments after something like this. The paddock complained about the fact that Joe could be a commercial deal for us. But everybody has f***ing commercial deals! We are in a business, and we want to develop the business. But at the end, I think it's important that Joe is showing to the world that he is there for the performance first.

What final result in the championship will you be satisfied with?

I don't know, because it also depends what the others are doing. But what I would love to have is a positive dynamic. To be able to bring updates and to improve during the season [is] even more important than the final position. Because it's the best way for the long term. I don't want to have a good start and then go down. We have to keep the dynamic positive, even if it's difficult for us, because we are still below the cost cap, and for sure the last five or 10 million are always spent on development. At some stage it will become difficult for us, but we have to keep up.

INSIDE THE FACTORY

AlphaTauri's mission in F1 is to sell clothes and train young drivers rather than win the championship – but you still need a cutting-edge factory to do that. Team boss **Franz Tost** takes *GP Racing* on a guided tour of a facility that's continuing to grow...

WORDS OLEG KARPOV
PHOTOS CARL BINGHAM



FRANZ TOST OPENS THE DOOR leading us into a spacious corridor. It's a touch colder here than in the rest of the building, and the pressure is lower. Until the main door closes, you cannot open the following ones. In the rooms behind them, composite materials are being worked on – and they prefer low temperatures.

People in white lab coats can be seen at work behind pristine glass walls. The impression is that of a medical supplies production plant, rather than a race team's base.

The whole thing is spotlessly clean – yet, it seems, still not quite up to Franz Tost's

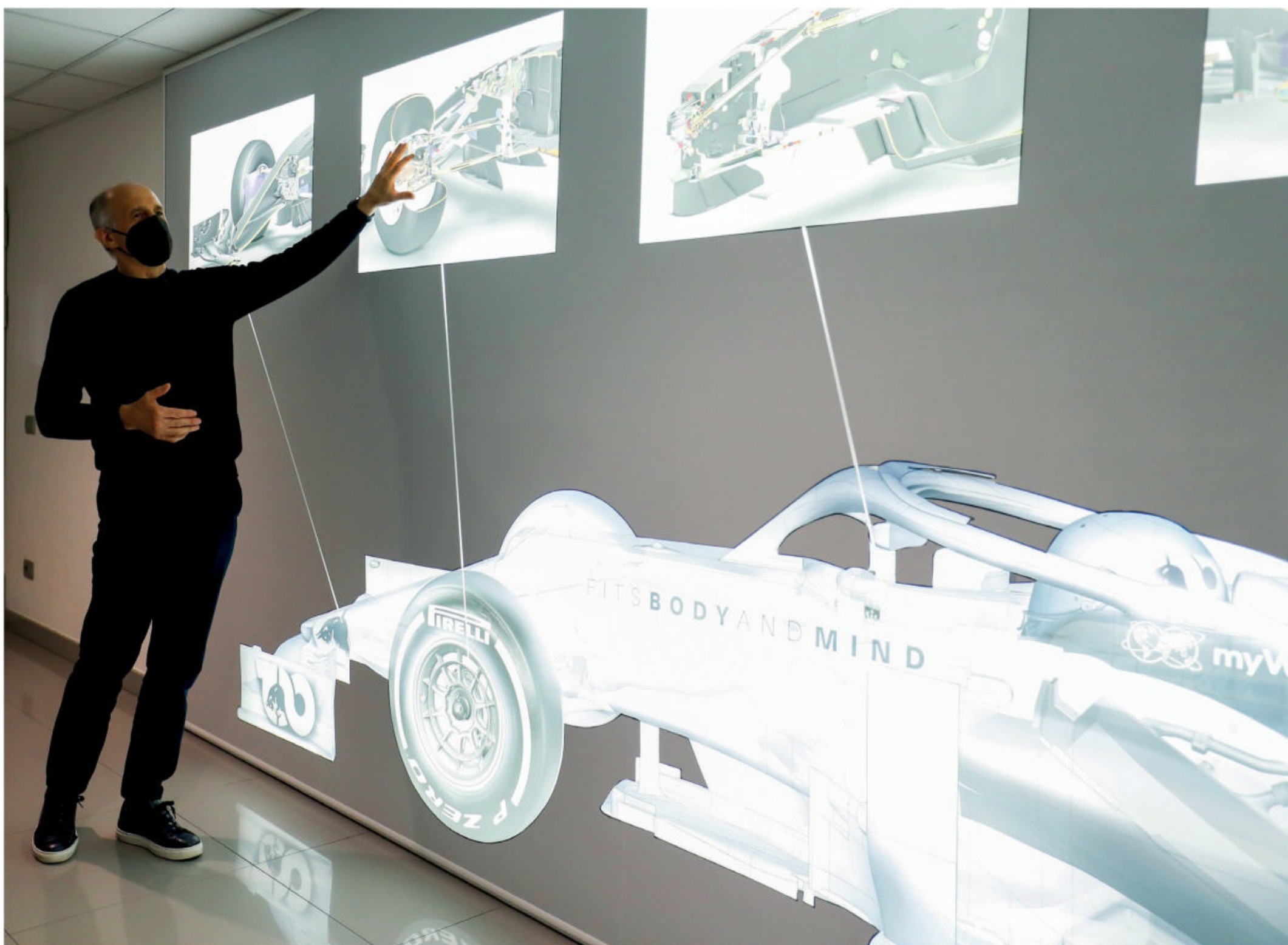
exacting standards. As we look around, the Austrian Scuderia AlphaTauri chief pushes some cardboard off-cuts, plastic bags and other waste deeper into a wastebin, out of sight. Orderliness is a priority here – from the engineers' offices to the workshops.

It would hardly be an exaggeration to say that this building, as well as the whole of the factory on Via della Boaria in Faenza, is his life's work.

"When I came here the first time, it was obvious the team wasn't in the best shape," Tost tells *GP Racing*, "the factory was old. You could see that the team had struggled financially for many years."

The building formerly occupied by Minardi – the team bought out by Red Bull at the end of 2005 – is a couple of hundred metres away from the one that's been erected during Tost's tenure. The former structure now hosts PR, marketing, and the paint shop, but it's the latter where most of the production work takes place.

There are two main staircases in that building. One of them is unofficially called "Vettel's staircase". On the walls here are photos from Monza 2008, when the young Sebastian scored pole position and then won the wet Italian GP. And upon reaching the second floor you're met with a windtunnel model of that very STR3 car.



“It’s been here since 2012,” says Tost about the display. “It’s a victory area from Monza. We collected a lot of photos with Sebastian from that weekend and hung them on the walls to boost motivation for employees, so they can always have memories of that beautiful moment.”

The team was different back then. There was no new Faenza building – Toro Rosso simply used Red Bull Racing cars at the time, only needing to adapt the chassis to a different manufacturer’s engine.

“This was an Adrian Newey car with a fantastic Ferrari engine,” recalls Franz of the STR3, “and with an unbelievably good driver in Sebastian.

But I must also say that the team did a good job. Giorgio Ascanelli was engineering the car in those days, he was our technical director, and we were competitive. It was wet, of course, but our car was fast, Vettel did a fantastic job and the team also.”

At the time of Vettel’s Monza win, Toro Rosso was still based in the old Minardi building. The team was running a customer chassis, and so the modest infrastructure was sufficient.

“The complete philosophy was different than nowadays,” says Tost. “When Dietrich Mateschitz bought the team he said we have to use the synergies with Red Bull Technologies,

and we have to educate young Red Bull drivers. This worked fantastically until we won in Monza and then our opponents, as usual in Formula 1, got upset. And from one day to the next, the regulations were changed, which meant that we had to start producing in-house or with suppliers the complete car.

“We had to invest a lot in the new base and, yeah, fortunately we’ve built everything here, because now we really need it.”

When F1 forbade ‘the Toro Rosso model’, construction on the new base began in Faenza. Now that base is over 10 years old, and the team is no longer anywhere near the smallest ▶



A windtunnel model of Sebastian Vettel's 2008 Italian GP-winning STR3 (top) and pictures of that and Pierre Gasly's 2020 triumph (above) remind everyone of the team's successes

in Formula 1. AlphaTauri permanently employs around 400 people, a figure that rises to 500 during the winter when the new car is being built up. Around 20 staffers have remained since the Minardi years, according to Tost.

We make our way to the design office – a large room hosting around 60 workspaces.

“There are different groups: here at the front are a few people working with CFD,” says Franz, making his way through the room, “then we have the vehicle performance group and a group responsible for bodywork and floor, for example, and other parts. Then the monocoque group, the system group, gearbox, hydraulic groups and the

one which is responsible for tools.”

One of the walls hosts a monitor with a live feed from the UK base in Bicester, where AlphaTauri has its wind tunnel.

“We always see them, they see us,” says Tost.

AlphaTauri's facilities have given it the capacity to be fully independent from Red Bull. Certain elements – such as the transmission and the rear suspension – Tost's team still gets from Milton Keynes, but it can all be designed and produced at Faenza if need be.

“That would not be a problem,” confirms Franz. “Because we did this already in the past. When we had different engines we also made the

gearbox by ourselves. It would be possible, but we would spend much more money and also, let's not forget that Red Bull Technologies, from a technical side they are on a very, very high level.”

Nevertheless, AlphaTauri always has freedom of choice. For instance, this year – unlike last – the designers from Faenza settled on a different front suspension concept. In contrast to the Red Bull, the AT03 has a push-rod system rather than pull-rod.

“I don't know any part which we couldn't make in-house,” says Tost. “Some parts we deliberately have to order because we simply run out of people and space. Sometimes wishbones, for example, we outsource, but not many parts. We want to do everything in-house, we want to have our own knowledge. And we want to be flexible, because with suppliers you're never as flexible as you can be if you do it by yourself. And it's cheaper.”

Not far from the design office is the so-called

ALPHATAURI CAN BE AS INDEPENDENT AS IT NEEDS TO BE – AND FRANZ ALWAYS HAS HIS IDEAS OF WHAT FUTURE DIRECTIONS TO PURSUE

operations room, which is used to support the race team during grand prix weekends. Since the number of personnel who can attend a GP is now limited by regulations, in recent years most F1 teams have set up additional engineering and strategy groups to offer remote assistance.

“Here 14-15 people are working, and all of them have their own tasks,” explains Tost as we enter the space, which resembles an air-traffic control room. The workstations, placed in two rows at different levels, are equipped with all the same tools, including radio, as are available to Franz and his colleagues on the pitwall.

“The engineers work here during free practice, qualifying and of course the race,” says Tost. “Each of them has a concrete task. One, for example, is responsible for tyre temperatures and pressures. The other one observes what rival teams are doing, listening to their radio communication and so on. They send this information to us on the pitwall, where we can then apply it. This is very important, because on-site [at the circuit] we're only allowed to have 60 people.”

The ground floor of the building is where the different elements of the car make their

journey from design to reality. After visiting the workshop with autoclaves where the carbon parts are baked, we arrive at where the other components are made. Tost grabs a small metal piece off the table – one which will soon become a rear wing detail – and leads us to the massive CNC machine where it had been formed.

“This is my favourite machine,” laughs Tost. “It makes very nice parts, real pieces of art. There is a robot inside and when the machine is programmed it can work 24 hours seven days a week. No discussions about family, no need for holidays, no questions about pay raise. It just works! Fantastic thing.”

We ascend to the second floor, via another staircase. This one is a shrine to Pierre Gasly, furnished with pictures from the other of the team’s Monza wins. The 2020 victory was different, though – since it was achieved using a car that had been designed and assembled right here, in Faenza.



Franz Tost is proud of his team’s factory, which has come a long way since Minardi was bought by Red Bull in late 2005



Next is the bodywork area. You’re not allowed to take photos here – but Franz does give us the opportunity to gauge the weight of a carbon sidepod (which you can lift with a single finger) and check out the intricately shaped rear brake duct developed by his engineers. Developed, it should be said, without outside assistance, as has allegedly been the case elsewhere in F1...

“I don’t like these brake ducts”, says Tost. While clearly proud of the fact his team can produce everything in-house if it needs to, he sees nothing wrong in F1 introducing as many

standard parts as possible.

“They [the brake ducts] cost us a lot of money. It’s like throwing it out of the window. It is a never ending story. We had a lot of discussions with team principals together, and we all agreed we don’t need such complex brake ducts. But the engineers come along and somehow manage to make it even more expensive.

“It’s so much money for nothing. Yes, they generate some points of downforce, but if you consider the costs... But anyway, it’s how it is and we have to accept it.”

The team continues to expand. It has already

travelled quite a long way from being Red Bull Racing’s ‘B team’, whose synergy with the mothership upsets rivals. AlphaTauri can be as independent as it needs to be – and Franz always has his ideas of what future directions to pursue.

“The next step is we want to build another building over there for press and marketing,” he says as our factory tour ends in his office, which is right above the main entrance.

“We’ll start hopefully in September or October this year. We are just finalising the contract.”

After that, a simulator will be the next step. Right now Tost’s drivers and engineers use the ▶



The AlphaTauri design office (top left) is where every component starts life and the team could, if it had to, make any part it requires for the car. At the moment, space is the main limiting factor

Red Bull one in Milton Keynes, but this is quite a limitation for AlphaTauri. So Franz wants one of his own.

“Simulators are getting more and more important nowadays, because of the limited testing,” he says. “You could also do some sessions on Friday after the free practice to get a back-to-back test and to evaluate something regarding the setup. It would help us to get more knowledge about the car.

“We’re working on this. We will start with a smaller project hopefully soon. And then a bigger project. This is something for 2023 or 2024.”

In Italy lunch is a meal of supreme importance





and Franz gives us a lift, in his Volkswagen Passat estate, to a roadside restaurant, La Tana del Lupo – just two kilometres from the team’s base. Tost likes for time to be spent efficiently – and it feels like his own work schedule in terms of density is second only to the factory robots. “I’ve never lived more than seven minutes away from work,” he says as he slots the Passat into its parking space.

Excluding the F1 car hanging off the ceiling – a gift of Tost’s – La Tana del Lupo’s interior is



ALPHATAURI IS ONE OF VERY FEW OUTFITS IN F1 NOT FACING A HARD DEADLINE BECAUSE OF SOME FIVE-YEAR PLAN TO WIN THE WORLD CHAMPIONSHIP

modestly decorated. Only one table is covered with a tablecloth, and it’s for the AlphaTauri boss, as indicated by the toy helmet placed to the side and painted in the team’s colours. This place is a favourite of the team, and not only for its proximity to the factory: the output of its kitchen is truly magnificent.

Faenza is one of many towns on the Via Emilia, a 250km road laid down in 187AD by the consul Marco Emilio Lepido. Today the route, which connects Piacenza with Rimini, is roughly tracked by the A1 autostrada and SS9 regional road. In Roman times retired soldiers were granted parcels of land in this area and turned their hands to farming, viticulture and metalwork. Over the following centuries Emilia Romagna acquired a reputation for the quality of its produce and the craft skills of its small-scale industries. Little wonder that the likes of Ferrari and Lamborghini should make this region their home.



“The infrastructure here is fantastic,” says Tost. “We are talking here about this motorsport valley, it starts from Parma with Dallara, then we have Ferrari in Modena, Ducati, Lamborghini, us and Gresini [a Ducati-aligned MotoGP competitor], many teams here in this area.

“We have a financial department that’s 100% Italian, the HR department is 100% Italian, logistics is 100% Italian; the mechanics are mixed, but most of them are Italians. And then the design office is mixed – not so many Italians, more English and other countries. Production is also mixed, it’s Italian and English people.”

But despite the beauty of the countryside and


Around 400 people work full-time at the Faenza facility, and future plans include another building for press/marketing – and a simulator

the pleasures of the table, Tost says it remains challenging to recruit top talent from abroad.

“The problem is usually the family,” he says. “Experienced people are around 40 years old, and they have families, they have children. And often families don’t want to relocate to Italy. Therefore it’s not easy to bring really experienced people here. But fortunately we’ve got some of them – their families stay in England. I prefer if they take long weekends, than trying to convince families to come to Italy.”

Perhaps this isn’t as big a problem for this team as it could be for others. AlphaTauri is one of very few outfits in F1 not facing a hard deadline because of some five-year plan to win the world championship. It’s in F1 for a different reason, one not predicated upon total victory.

“When Dietrich Mateschitz bought the team, he set our DNA,” says Tost. “There are two pillars: a) using synergies with Red Bull Technologies, because you don’t want to have the development costs of two teams; and b) training young drivers.

“If you have that, you can’t dream about the world championship, so what’s the point? I have zero problems with that, absolutely zero.” 

A DAY AT THE 'MUSEUM'



GP Racing pays a visit to designer **Jens Munser**, to observe the production of Mick Schumacher's special helmet for the Miami Grand Prix. What follows is some fascinating insight on the mindsets of Mick's dad Michael, and family friend Sebastian Vettel

WORDS OLEG KARPOV
PICTURES EKATERINA KOROLEVA
 **motorsport**
IMAGES

Jens with the Mick Schumacher Miami helmet design and the one he did for Michael for Indianapolis in 2001





Schumacher's Miami design takes shape in Munser's hands. He's come a long way from the days of drying the paint overnight in his parents' kitchen oven and making the house smell of solvent...

Mick Schumacher's helmet for the inaugural Miami Grand Prix is taken to the furnace. Having just had a double layer of clear coat applied, it will dry faster in there – as the driver needs to receive it in just a week's time, and Mick is just one of four F1 drivers having custom helmets for the Florida race prepared right here, at the office of German designer Jens Munser.

"When I was still painting helmets in the cellar at my parents' house, I dried them during the nights in the oven in the kitchen," Jens laughs as he reminisces on the time he crafted helmets for himself and his first clients in motocross. "The next day my mother would bake cakes inside the same oven. So I am happy my parents are still alive and have no health problems! Because back then the clear coat was full of solvent, and the whole kitchen would smell like hell. Nowadays solvents are much better, but 20 or 30 years ago it was just terrible."

These days Munser 'bakes' his helmets on the second floor of a two-story building on the outskirts of his native Salzgitter, which is near Braunschweig, east of Hanover. The furnace is in a separate room, in which Jens also works with paint. It's a small room next to the main offices,

which feature around 10 workstations – including that of Munser himself, which you can discern by the amount of production scrap.

Right now, Jens's desktop is packed with stickers, rolls of tape and printouts with designs of Mick's helmets. Also present is an airbrush kit, which Munser uses for the final strokes.

While Schumacher's future headwear is soaking in heat of around 50 degrees, we go downstairs, to the ground floor, which hosts something of a Munser museum. Among other things, it displays 10 or so helmets used by Mick's father, Michael, who was Munser's main client at the start of his career, and a couple dozen helmets of Sebastian Vettel's, working with whom allowed Munser to really make his name in Formula 1.

Jens Munser Designs currently employs 14 people. During his career, the German designer has got to work with around 40 Formula 1 drivers. His first world championship client was actually Toranosuke Takagi, but Jens only ever painted two helmets for him.

It was Munser's compatriots that helped him

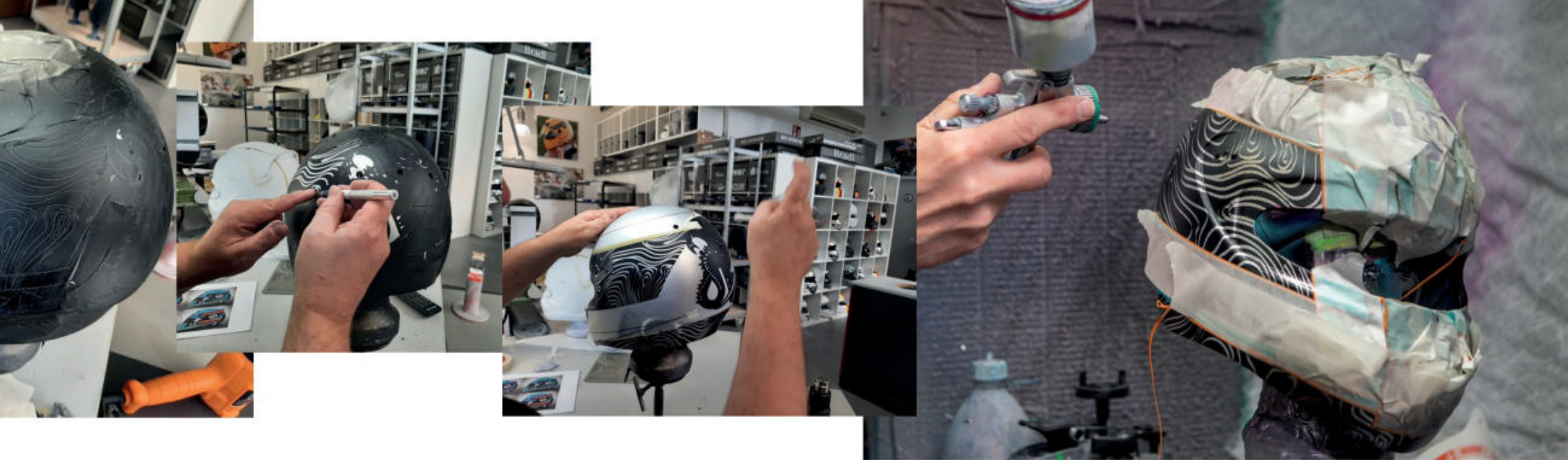
get established in F1. He joined Nick Heidfeld on the path from Formula 3 to F1, and then, when Schuberth landed Ralf Schumacher as a client, Munser got the gig of painting those helmets – as the manufacturer's base in Magdeburg is about 80 minutes' drive away from Salzgitter.

After that, Ralf's older brother became a client of Munser's too. And now he works not only with Mick but also with Ralf's son David, who currently competes in the DTM. However, it is of course for Sebastian Vettel that Munser has designed and produced the most helmets.

"My company was still small and I was sure the only way to stay in Formula 1 was to bring ideas – without ideas, I'm only a painter," he explains, while showing a collection of Vettel's helmets in his impromptu museum. In his Red Bull stint alone Sebastian used almost a hundred unique designs of Munser's. "I just told Seb 'let's do something crazy'," Munser laughs. "And then we never stopped."

"With Seb, we were the only ones doing it. Now everyone wants special helmets. There were 10 special helmets for Austin last year. Even more





for Miami now; nearly all drivers have a special helmet. I guess it will be the same for Monaco.

“But I think now the story became a little bit boring. What can you do for Monaco? Roulette, playing cards? Every year the same. Young drivers now don’t even know what we had done with Sebastian 15 years ago. They tell me: ‘Oh, Jens, we can draw a roulette for Monaco!’ And I say: ‘Oh, what a great idea!’ I’m looking forward to Las Vegas to see more roulettes and playing cards.”

While working on Mick Schumacher’s lid Munser is engaged in a simultaneous dialogue with his team of artists, who are busy putting the final touches on Vettel’s ‘first underwater grand prix’ helmet. Munser’s recent collaborations with the Aston Martin driver have all carried messages on global issues: in support of Ukraine; about the threat of global warming.

“I think it’s a sign that we’re getting older,”

Jens says. “It’s a bit like The Beatles. They started with ‘I want to hold your hand’, fun music. And then later John Lennon, as he was growing older, changed his music, his songs were about more important things.

“For Sebastian and me it’s almost the same story. We started with funny ideas, we’d done flake and chrome. And now he has his

statements, sometimes political too, and I’m happy we do it together. For me, it is something new again.”

By now, Mick’s helmet has been baking for long enough and Munser can continue his work. The process of painting a helmet (aside from, obviously, time)

essentially requires just three components: the paint, the decals and a whole lot of Scotch tape.

The first step after Munser receives the helmet from the manufacturer – in this case, from the Schuberth factory in Schio, Italy – is to apply the primer. Usually this is white paint, which is

applied over the carbon body of the helmet.

“When we just started to work with him, one of the first questions Michael asked me was: ‘Why do you start with white? Can’t you start with red?’ ” smiles Jens. “It struck me because nobody had ever asked me that question, but it is actually a good one.

“He’s a race driver, he doesn’t know that fluorescent paint is transparent. So I explained that we need white colour to bring through the brightness: ‘Without it, your helmet will be brown, Michael’. And he agreed. But he wanted to reduce the weight as much as possible.

“For him, it was only important that his helmet is red because he wanted every other driver to know it’s him coming from behind: ‘Oh, there’s a Ferrari. Is it Michael or Rubens? Michael!? I’d better move aside faster’.

“The paint we used for his helmet was full of pigments, it was almost like powder because we reduced the binder to a minimum. Then he told me: ‘I don’t need a mega glossy clear coat’, and I usually did three or four layers of clear coat. In the end, he agreed to do just one. And the helmet was... I just couldn’t look at it. Because under the lights in the garage you could see all the steps, ▶

“ONE OF THE FIRST QUESTIONS MICHAEL ASKED ME WAS: ‘WHY DO YOU START WITH WHITE? CAN’T YOU START WITH RED?’”





Munser in his workshop (above). A close-up of the new helmet (left) and Mick with the lid in Miami (below)



MICK'S SPECIAL MIAMI HELMET IS ALMOST DONE. FOR JENS, IT IS NOWHERE NEAR THE FIRST CUSTOM LID DESIGNED FOR A SCHUMACHER TO RACE IN A GRAND PRIX IN THE UNITED STATES

the pigments. It looked terrible, but it was OK for him. Because he had saved a lot of weight.

"I'm still sure this is the secret of his success. Not that his helmet was lighter, but because he asked all these questions. My part was tiny, but I am sure he drove his engineers crazy with all his questions. He was a great driver, yes, but he was an even better developer."

In the case of Mick's Miami helmet, after the white paint Jens adds a layer of silver flake paint. In the final design it shows through only in the outlines of a dragon at the back of the helmet and the wave patterns on the sides.

Getting the dragon image – which has migrated to Mick's lids from those used by his father – onto the helmet is the next step. Having had its outline 'printed' on a special cutting plotter, Munser transfers it to the helmet. After that, step by step covering and uncovering various areas of the helmet with white scotch tape, he applies several layers of paint: base Miami blue, black for the dragon and the patterns on the sides and bottom, plus two lines of magenta.

When the painting process is over, it's time to carefully peel off the dragon-shaped sticker, to expose the silver tone. The same goes for the side patterns. It's only now that the trademark Schumacher stars and stripes are added to the

crown of the helmet. They are printed out, as are the logos of sponsor 1&1. Once these are added to their rightful places, Munser covers the helmet with a double layer of clear coat.

After the furnacing, Munser gets to sanding the helmet, to smooth out any roughness before adding the remaining sponsor decals. The next step is to add a small layer of black paint on the magenta lines, to achieve a fading effect.

Mick's special Miami helmet is almost done. For Jens, it is nowhere near the first custom lid designed for a Schumacher to race in a grand prix in the United States. Twenty years ago, it was Munser who put together the American flag helmet design for Michael to run at Indianapolis, after the September 11 tragedy. A copy of that helmet is part of Munser's museum.

"This is the second helmet, the one he never used," Jens says while showcasing it. "Ahead of the race I started preparing two helmets, but we were not sure whether he'd use the design. The situation was really difficult because no one knew what will happen next. But I still wanted to make these helmets ready. And then Ferrari showed their car with an American flag on the side, and a guy from Schubert told me: 'Maybe you're right, maybe Michael wants to make a statement, too'.

"So, we finished one helmet overnight, and

found a photographer from Munich who could carry one helmet to America. The second one stayed here. It is a nice thing to remember. That weekend Michael's helmet was a big story. They showed it on CNN, it was their main story of the evening news release: the statement from the F1 world champion in support of the US."

After the final sponsor stickers are applied, Munser adds another layer of clear coat, has the helmet dried again and then sends it to Magdeburg. There, Schubert specialists will fit it with the necessary components and have it delivered to Florida.

Truthfully, Mick's Miami helmet is not a huge departure by the standards of modern F1. The only real major change is the colour scheme – all the familiar elements, like the stars and the dragon, are where they always were.

"We have nothing that connects it to Miami too much," says Munser. "Nothing like palms or beach. The idea of this helmet was born when he told me that he likes that colour. We've already had it on his regular green helmet on the back, and he asked me to have it in the front too. I thought it would be nice to do it for Miami, because that's one of its colours.

After all, if he likes it, nothing stops him from using it again." 



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THE LONG INTERVIEW

After two terrifying crashes, one of the best British racers of the 1950s retired before his career peaked. But that's why we were able to speak to **Tony Brooks** in 2014. Like his friend Stirling Moss, Brooks was regarded as one of the best drivers never to have won the world championship. Here, as our tribute to Brooks who died last month, is that interview in full

WORDS MAURICE HAMILTON
PORTRAITS DREW GIBSON

THIS IS
TONY
BROOKS





S

omehow, it's rather appropriate that the crowd enjoying the bank-holiday sunshine at the Brooklands Museum should be oblivious to a truly outstanding grand prix driver heading towards our lunch in the clubhouse. Tony Brooks has been described by his great rival and friend, Sir Stirling Moss, as "The greatest 'little-known' driver of all time."

How else could you sum up a driver who has won at Spa, the Nürburgring Nordschleife and Monza; a man with a start-to-win ratio of 26 per cent while racing for Connaught, Vanwall and Ferrari, yet who is so rarely mentioned? Modesty has been a hallmark of Tony Brooks since he drove a Connaught to victory in Sicily to produce the first win for a British car and driver abroad in 31 years. Imagine if it happened now; in 1955, it barely got a mention. And nearly 60 years on, he still melts into the background. I can't wait to shine a spotlight on this quiet hero...

Maurice Hamilton: Your start in F1 was unorthodox. You were a dental student, you'd been racing at Goodwood and places like that, and you got a call asking if you'd like to race in a grand prix [the 1955 non-championship Syracuse GP]. That sort of thing is hard to grasp these days. Were you surprised?

A trip down memory lane as driver and journalist pore over pictures of Brooks in action

Tony Brooks: Well, yes; very surprised because I'd never even sat in a Formula 1 car, let alone driven one. The only thing that reduced the surprise slightly is I had driven a works Connaught sportscar a few weeks before. So I presumed they were reasonably happy with that.

MH: Was your priority to qualify as a dentist?

TB: Definitely. In no way did I regard motor racing as a long-term, or even medium-term way of earning a living. It was so dangerous then that you couldn't think of that seriously. It was always my intention to finish my qualifications so I had a good means of earning a living.

MH: The danger element, as you say, was very evident then. Did that not concern you?

TB: Well, you either accepted the risk or you didn't. But the point is, I never psyched myself up. I was fortunately blessed with a reasonable amount of natural ability and I always drove within that. I never frightened myself as a result of something I did.

MH: You obviously took a great deal of pleasure from being able to control a car, judging by the numerous pictures of you in a four-wheel drift.

TB: I found this fantastic sensation of driving a car on the limit of adhesion, trying to balance it with the mere caress of the steering wheel and the accelerator. To me it was literally poetry in motion, which is why I chose that expression for the title of my book [Tony's autobiography *Poetry In Motion* was published in 2012].

MH: OK, I understand that. But it couldn't have been a massive amount of help when you'd go to a circuit you had never seen before, drive a car you had never raced – and win!

TB: I don't want to flog this, but driving came naturally to me. I drove to the limit of my capability and enjoyed it. But I had no idea what the actual level of that ability was; you can't judge that until you're up against the top drivers. To everybody's surprise, not least myself, I won.

MH: I was fascinated by what happened after you had won. There you were, the hero of the moment but also trying to be a dentist – and you'd lost a front tooth!

TB: [Laughs] Yes, not an ideal situation. I'd been trying to learn the circuit the best I could on a scooter because, of course, we had no cars. I'd done so many miles on the Vespa, twisting the grip, that it had rubbed the inside of my thumb and forefinger. It got to the point where it was so sore, I had to put a handkerchief on it.

Winning the race was obviously a new experience for me and all I wanted to do was escape back to my hotel and have a nice shower. I was being followed by crowds who, I have to say, were very magnanimous and enthusiastic, considering they had gone there to see Maserati win! I was surrounded by these people as I got on the scooter while, at the same time, trying to put the handkerchief round my injured hand. To do that, I had to use my teeth to pull one end of the handkerchief and tighten it. I had a temporary crown at the front and it was





not up to a rather strong pull from a handkerchief. It came out – and fell on the floor. So you had the winner of the race surrounded by excited Sicilians while he grovelled around on the ground looking for his tooth. All I could see were these rather smart casual boots the Sicilians were wearing.

I couldn't find the tooth. It's bad enough for anybody to lose a central incisor; even worse for a dental student. I was dreading the prizegiving. But I was very lucky in that, being a belt and braces man, I'd kept the previous temporary crown in my baggage and managed to pop it on. But I didn't have any cement to hold it in place, so it was a question of this Englishman having to demonstrate the stiff upper lip to try to keep his central incisor in place, and also mumble a few words at the prizegiving; a tricky exercise.

MH: You can imagine, if that happened to Lewis Hamilton or Jenson Button now, it would be front-page news. But things were very different then, weren't they? Here we had a situation where a British driver had won what would have been termed a 'continental grand prix' in a British car. A big story. Did anyone pay any attention when you got back home?

TB: No, not really. I think we got the odd paragraph here and there in the national newspapers. Motor racing was nowhere in terms of public perception, so it got very little coverage.

MH: Extraordinary, when you consider what you'd achieved. In terms of your career, however, it put the motor racing spotlight on you.

TB: I was spoiled for choice after winning at Syracuse. Connaught wanted me to stay with them, Rob Walker [later to become entrant for Stirling Moss] was interested, as were BRM. Connaught were a great team, but unfortunately they lacked financial backing and were underpowered compared with the competition because they used a pre-war engine that had been bored out to two-and-a-half litres. Of course, when you stretch something to the limit, you undermine your reliability. BRM had the money and, on paper, seemed to be the best prospect of producing a grand-prix-winning car. But we all make mistakes, some mistakes bigger than others. The BRM was pathetic. Totally unreliable; didn't hold the road.

MH: Before we discuss the BRM's shortcomings, can I clarify that you were still studying for your dental exams?

TB: Yes, I qualified in December 1956. That was a good thing because I was more concerned about not slipping behind with my studies than dealing with what was involved in motor racing. I'm not saying I wasn't totally committed to motor

Brooks' BRM accident at the 1956 British GP was caused by a problem with a sticking accelerator. He was thrown clear of the car on impact: "I was very lucky"

racing but my studies were probably a good distraction. If you didn't pass the exams, you could lose a year and have to do it all over again. There was a lot at stake if you let it slip.

MH: Were you being paid to drive the BRM? I only ask because, if so, was the rate of pay not sufficient to make you think: 'Right, forget everything else; I want to be an F1 driver?'

TB: Oh no, it wouldn't be good enough. In any case, I wouldn't have done that because nobody with any sense in those days would have regarded motor racing as a way to earn a living.

I never intended to make motor racing my career.

MH: Talking about the hazards of racing in those days, you experienced that first hand with BRM and were very fortunate to get away with it during the 1956 British Grand Prix at Silverstone.

TB: The accelerator linkage broke so I brought the BRM into the pits for repairs and lost umpteen laps. I was out of the race in terms of getting a decent place. I rejoined and, still very much a new boy in F1, I thought: 'If I can't finish up anywhere decent, at least I'd better demonstrate that I know how to drive a grand prix car.' The way things had turned out, this was my first world championship grand prix.

I noticed straight away that the accelerator was sticking. They'd not done a complete job and I should have brought it back in. I had been going through Abbey Curve flat without any problem but, while I'd been in the pits, a lot more oil and rubber had been put down. So, I was drifting the car – as much as you could drift that BRM – through Abbey Curve ▶

THE BRM DEPOSITED ME NICELY ON THE GRASS THEN SET FIRE TO ITSELF – WHICH WAS THE ONLY REASONABLE THING IT COULD DO



on the correct line and at the correct speed, but because of the rubber and oil I needed a quick lift off the throttle and down again. When I lifted off, it didn't happen. The car ran wide out of the corner and, with any decent car such as a 250F Maserati, you'd have run on the grass for 50 yards or so and edged back onto the circuit. But the BRM spun, finished up on the other side of the circuit then flipped over, but on the grass. I think it hit the banking; I wasn't taking an awful lot of notice at the time. I was thrown out. I was very lucky – the car deposited me nicely on the grass verge rather than the macadam. Then the car set fire to itself which, as I've said many times, was the only reasonable thing it could do.

MH: The following year, 1957, you've taken another big step, this time with Vanwall, the domain of industrialist Tony Vandervell. Did you feel this was a team going somewhere?

TB: Indeed. I believe that a grand prix team has to have an autocrat. Tony Vandervell was a committed person. He called the shots and paid the money. Like everyone else, he made some mistakes, but he very quickly put them right. He was very straightforward: I got on well with Tony. The success of Vanwall was down to him.

MH: It was such a nice looking car with a lot of aerodynamic thought put into it – which was quite unusual then, wasn't it?

TB: People didn't realise the part aerodynamics could play. They thought aerodynamics were more a question of how fast a car went in a straight line, not how it affected the road holding; that was not appreciated at that time.

MH: Was it a tricky car to drive?

TB: Yes, it was hard work. But I won't knock a car that won the world manufacturers' [constructors'] championship in 1958, and beat Ferrari, Maserati and so on. It was the complete opposite of a 250F Maserati, which would say to the driver: 'Please four-wheel drift me.' The Vanwall didn't say that; it would be much happier cornering closer to a geometrical line. We did drift it, but it was hard work. In the end, whatever you may think about driving the car, it's the results that count, isn't it?

MH: Exactly. I think it's fair to say that a grand prix car shouldn't necessarily be easy to drive.

TB: That's right. Front-engine cars were not easy to drive but the balance of the 250F Maserati was such that it encouraged people to have a go.

After his 1957 Le Mans shunt (below, right), Brooks went on to claim his first world championship GP victory at Aintree, a shared drive with Stirling Moss (below) after handing over his car to Moss

MH: There are two things connected with 1957 I'd like to chat about. They're both related – even though one occurred at Le Mans and the other happened a few weeks later at the British GP. You had an accident while you were driving an Aston Martin, and this was significant because it would affect how you approached racing and your thinking. Then you went on to share the winning Vanwall with Stirling Moss at Aintree. First, tell me what actually happened at Le Mans. The car was stuck in gear and you thought you could get it out?

TB: Yes, that's right. It was locked in fourth gear. This had also happened to me at Spa, but I'd managed to win that race nevertheless; I'd managed to free it. That's why I thought I could do the same thing when it happened again at Le Mans. Noel Cunningham-Reid brought in the car some time after midnight and he said it was stuck in fourth gear. I thought: 'Well, we're lying second, we don't want to lose time, so I'll have a go at getting it out.'

I managed to slip the clutch and get out of the pits. I took the first opportunity to try to apply the system which had worked at Spa. And the first opportunity was not really a long enough straight; I should have waited for Mulsanne, but this was the short straight between the Esses and Tertre Rouge. I was accelerating and then suddenly taking my foot off the accelerator, loading the gearbox with acceleration and then de-loading it hoping that would help the gear lever pop out – as it had done before.

And, of course, I was doing the first thing you're told not to do when you learn to drive, and that is looking down at the gear lever. So I was monkeying about with this gear lever, looked up and discovered I'd passed my braking point.

I was going too quick for the corner and the second mistake was to think I could put the car into a four-wheel drift and get it round the corner; I was on a perfectly good line. But I needed about another 10 feet of grass on the exit to be able to go off and come back again. Unfortunately, the sand came right down to the road. The car started to run up the sand bank, got to the top and flipped over, trapping me beneath the rear of the car. I was trapped in the cockpit and just waiting for the next car to come round. It seemed like it was a choice of either cremation or simply being run over.



MH: You'd just pitted, so was it full of fuel?

TB: Oh yes, it was. Absolutely full. I could smell it. The chap who came round next – a very nice bloke, dear old Umberto Maglioli – he'd seen the back of my car was sticking out and into the road. So he came round the corner and obviously didn't use the full width of the corner. He just hit the back of the Aston Martin and carried on. But he had done just enough to take the weight off me and allow me to scramble up the sand bank and into the arms of the marshal – who I think was far more astonished than I was.

So again, I was very, very lucky. It was a result of these two incidents – the BRM at Silverstone and the Aston Martin at Le Mans – that I made an absolutely committed resolution not to try to drive substandard cars at competitive speeds. Racing was dangerous enough without loading the dice against yourself by trying to race cars that weren't fit to race. That's not to say that I wouldn't finish a race with a car, making the best use of it I could, but not trying to race it to the limit because it was no longer fit.

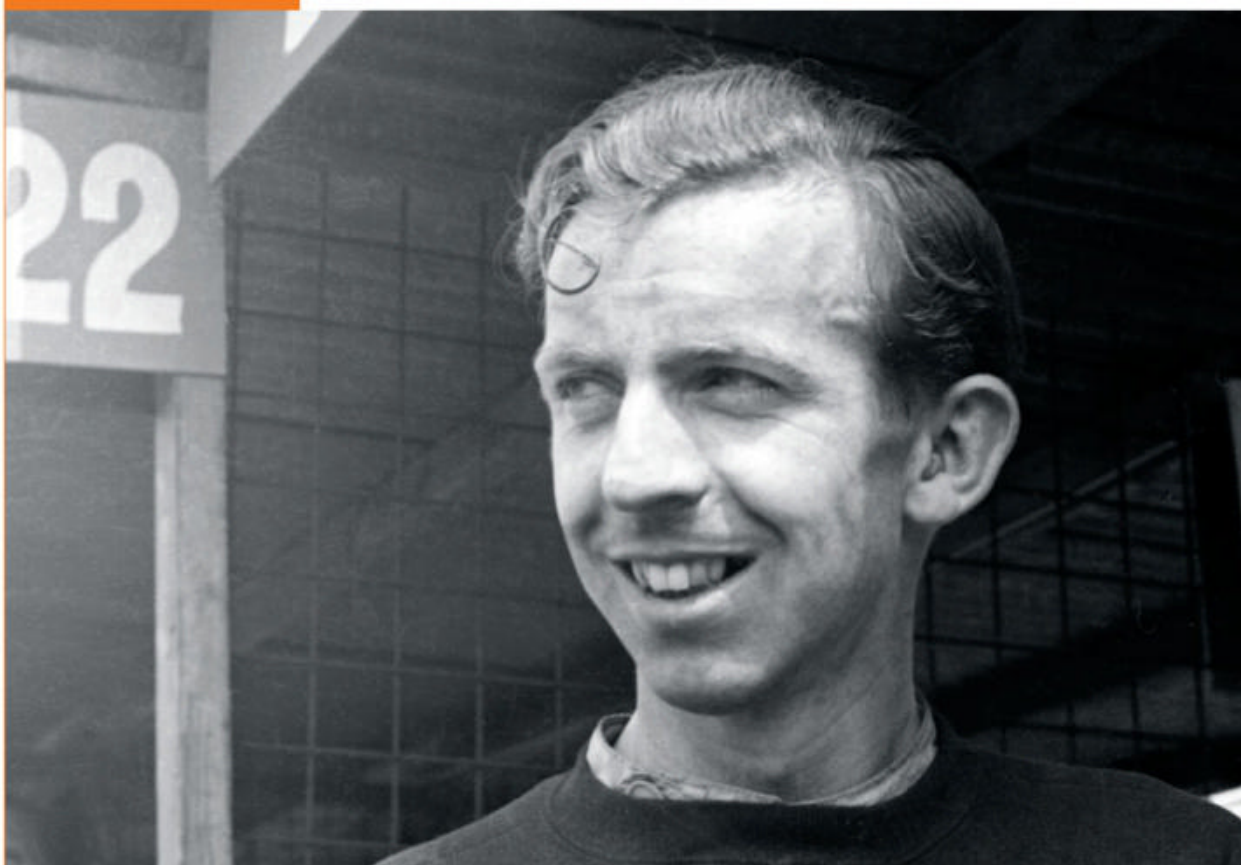
I would never retire just because of, I don't know, you have the mudguards rattling or something like that. I would do the best with what the car was capable of doing, but I wouldn't try to do something beyond what I thought was the capability of the car in that mechanical condition. That was my firm resolution, which is the reason I lost the championship in 1959, and it's also the reason why I'm here talking to you today and having a nice glass of wine.

MH: I take your point. And nice to have you here... cheers! Before we get on to the championship in 1959, I want to stay with 1957. After the Le Mans accident, you were covered with abrasions; you referred to having a hole in your right side. I take it that was no exaggeration?

TB: No. You could get tennis ball in the hole. I don't know what caused it; it must have been part of the cockpit; it may have been pressed against the door handle or something. But that contributed towards the firm resolution I refer to. If you can't take hints like that, you are thick.

MH: So, the British GP at Aintree was coming up and you had a commitment to Vanwall. But you weren't in the best of shape, were you?

“
THE CAR RAN UP THE SAND BANK AND FLIPPED, TRAPPING ME BENEATH. IT SEEMED LIKE IT WAS A CHOICE OF CREMATION OR BEING RUN OVER
”



After his Le Mans accident in 1957, Brooks vowed that he would never race cars to the limit that weren't fit for purpose

TB: It was less than a month between the two events. I'd been in bed until the Tuesday before the British Grand Prix. The first time I drove a car after Le Mans was my father's Ford Zephyr to go to Aintree for the first day of practice, which would have been the Thursday because the race was on Saturday in those days. I'd lost a stone; with my physique, that's quite a lot to lose. I wasn't in a fit state to race, but the obvious thinking was that we'd have a better chance of winning the race if we could start three cars rather than just two, Stirling and Stuart Lewis-Evans being the other drivers.

I equalled the lap record in practice, which I was pleased about. Stirling, in fact, was slower in my car when he tried it. But, in his new car, he was something like two tenths of a second quicker. I was on the front row, but putting in a fast lap is one thing; 90 laps at competitive speed in my state of health wouldn't have been on. So we agreed that in the event of Stirling or Stuart having a problem with their cars, they would take over my car – which was how it worked.

MH: Stirling had a misfire, came in, took over your car and climbed back through the field to win; a joint win for you both, which, of course, was allowed in those days.

TB: I was very sorry that I was in that sort of state, but it was my fault, really. It resulted in a great success for Vanwall and for British motor racing, and that's what mattered. It was a wonderful feeling but, obviously, I regret I wasn't able to do it alone. But the main thing was that Vanwall won the first [of an eventual nine] world championship events.

MH: Although you might not have said anything, was part of that weekend at Aintree quietly proving to yourself that you were still OK after the Le Mans accident?

TB: Absolutely. It was very important, psychologically. Neither of the accidents undermined my confidence because there was a perfectly good reason for them; a sticking throttle at Silverstone and sheer stupidity at Le Mans. It wasn't a driver error as such, you see, and that makes all the difference. ▶



I AGONISED ABOUT COMING IN AT SEBRING. I'M PROUD I HAD THE COURAGE BECAUSE I KNEW I WAS BLOWING THE CHAMPIONSHIP

MH: You really proved it by winning at Spa and the Nürburgring; two wonderful circuits.

TB: Yes, well, I thought the three great circuits were Spa, Nürburgring and Monza, and it was lovely to win them all in one season: 1958 was a very, very satisfying year, it really was.

MH: Tell us about driving for Ferrari in 1959. When you got the call, how did you feel about it?

TB: They say every driver has a wish to drive part of their career with Ferrari and I was fortunate that it was thrust upon me; I didn't have to ask him [Enzo Ferrari]. In January 1959, Tony Vandervell announced his team's retirement from grand prix motor racing and Romolo Tavoni, the team manager at Ferrari, rang me up within a few days and asked if I would be interested in driving for Ferrari. So what do you say?

MH: How did you find Enzo Ferrari? Was there a translator? Did you speak Italian by that stage?

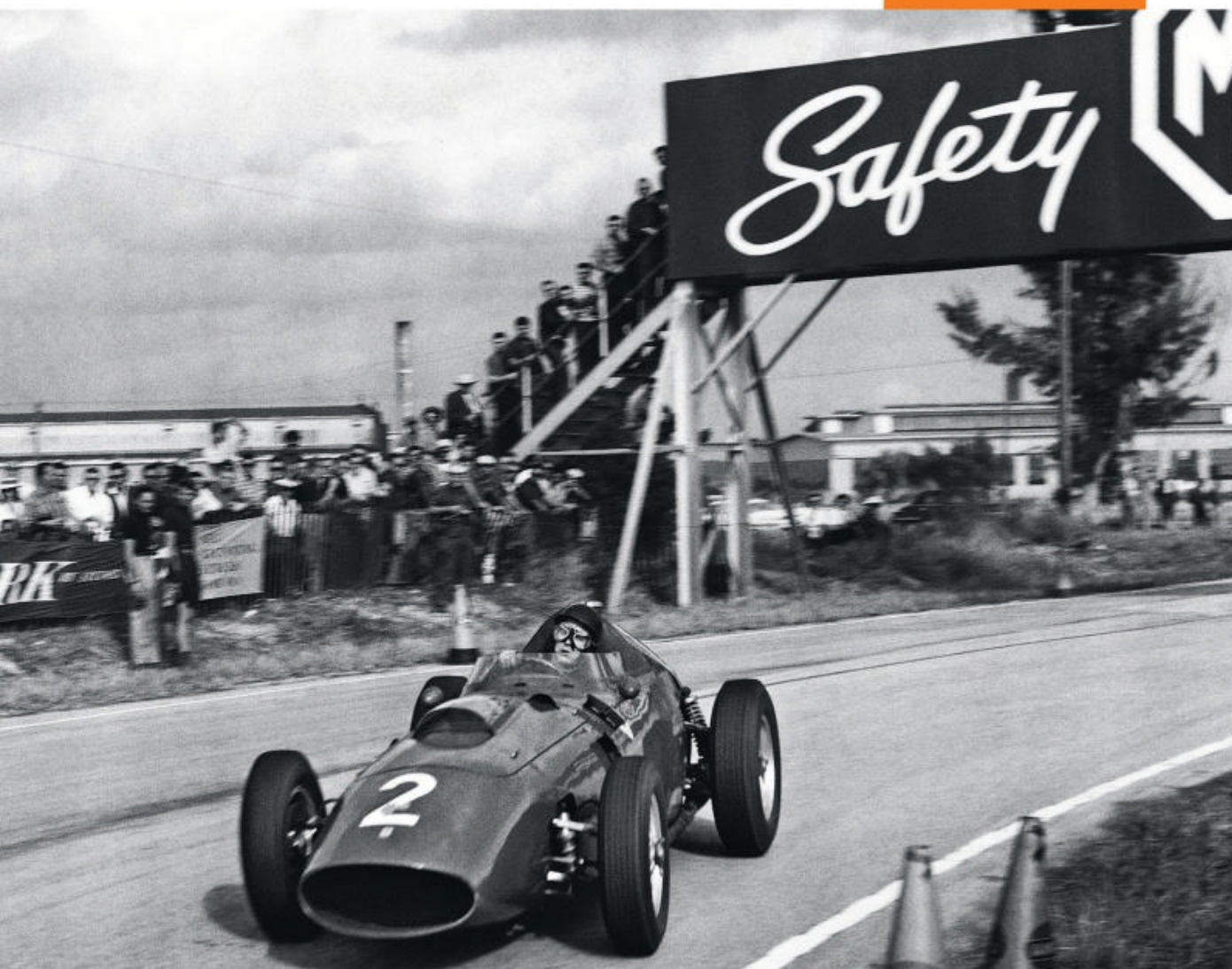
TB: Yes I did. I never had any problem with Enzo Ferrari. We must have had a chat for about 45 minutes, without the need to have an accountant or a lawyer on either side. We agreed the terms for me to drive for Ferrari for '59. I really didn't want to do Le Mans and, to my amazement, he agreed – because obviously Le Mans was very important when it came to selling his road cars.

MH: How was the Formula 1 car in 1959?

TB: We were in the middle of a transformation from front engine to rear engine. But the point is, Ferrari could and should have won the world championship that year. But there was a strike and they didn't go to the British Grand Prix at Aintree. Jean Behra and I had been first and second in the Aintree 200 [a non-championship race] a few weeks beforehand, so the chances were high. But we never appeared at the British Grand Prix, so no points there for Ferrari.

Then, the Belgian Grand Prix was cancelled. I'd won every time I'd been to Spa, which was three times, and if ever there was a Ferrari circuit, this was it. So, the odds were that I should have got some points there. Then there was the Italian Grand Prix where I was on the front row, next to Stirling,





who was on pole with the Cooper-Climax. Probably the words I most regret ever uttering in this life was after practice when I said: "Oh, I'm smelling Ferodo a little bit; I'm pretty sure it's the brakes." They decided it might have been the clutch and changed it overnight – which was totally unnecessary. Either there was a faulty clutch or they didn't put it in properly, because I did 100 metres at the start of the Italian GP and that was it. No points.

MH: And now we come to the final round, the US Grand Prix at Sebring. This is significant in the light of the pact that you'd made with yourself.

TB: That's correct. Dear old Wolfgang von Trips rams me up the backside on the first lap. Remembering my decision that you must check the car, I had half a lap agonising about it. I'm proud I had the courage, and that's what it needed, because I knew I was blowing the championship: I still had a chance of winning the title at that point.

By going in, I was honouring the solemn promise to myself, but I was also saying cheerio to the championship. The car was OK. The irony was Stirling retired and Brabham ran out of petrol; Jack was always trying to cut it too fine! I would have won the race and the championship. Instead, I finished third and Jack took the title. That's why I say Ferrari could have won the championship that year.

MH: I take it you have absolutely no regrets whatsoever about that decision at Sebring.

TB: No, and I'd do the same again. I would have been dishonourable to myself if I'd broken it. And as I say, that's

Wins in 1959 in France (top, right) and Germany (above, right) put Brooks in the running for the championship. At Sebring (above) Brooks finished third, losing the title to Jack Brabham

one of the reasons why I'm sitting here having lunch with you.

MH: Because your belief is that God has given us a life and it shouldn't be abused in any way?

TB: That's right; absolutely. It's sacred.

MH: There's a lot of talk today about team-mates, particularly with Lewis Hamilton and Nico Rosberg being competitive drivers in a very competitive car. Did that arise in those days because you had, at Ferrari for example, quite a mixed band of team-mates? Did you just do your own thing, and that was the start and end of it?

TB: In my conversation with Ferrari, he made it perfectly clear there would be no number one driver until it became obvious who was most likely to win the championship. Then you would become the number one driver, which fell on my shoulders. And he said number one doesn't mean 'I'll have that car, I'll have that engine, I'll have that chassis and put them all together.' It means the team objectives and programme would try to ensure the driver in question went ahead and won the title. When I established myself as the most promising winner, then I became number one, but only then. Which was very sensible.

MH: And it's all recorded in detail in your book – which I believe you wrote entirely yourself.

TB: Every word. It's a true autobiography!

MH: Well, on the basis of your remarkable story, I have to say it's a shame you're not world champion because you deserve to be. But nice, as you say, to have you here to tell us about it.

TB: You're very generous. Thank you. 



BERNIE

THE HISTORY OF BRABHAM

TAKES

PART 3: 1971-81

OVER

With a new boss at the helm, change was coming to Brabham – change that would shape the future of Formula 1...

WORDS DAMIEN SMITH

PICTURES



motorsport
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By the end of 1971 Ecclestone was in control and for the 1972 season Reutemann (left) joined Hill in the driver line-up

Bernie Ecclestone claims Ron Tauranac advised him to sack a young Gordon Murray and keep the rest when he took over Brabham – but instead he (Bernie) chose to do the opposite. It's an exaggeration, but the quip at least reflects Bernie's 'my-way' approach as he swept a new broom through Jack Brabham's New Haw factory in the early 1970s.

Murray reckons Tauranac hired him on a misunderstanding when the South African engineering graduate walked in off the street. Born in Durban in 1946, racing-obsessed Murray travelled to England in December 1969 without a clear plan of how to land a break. Lotus knocked him back, but when he turned up at Brabham by fluke there were design office vacancies. Tauranac might have thought Gordon had formally applied for one of the posts and took him on, perhaps on the basis of the only obvious thing they had in common: like the veteran Aussie, new-age Murray had started out back home building his own 'special', a Lotus 7-type racer that he campaigned in South Africa in the mid-1960s.

By the end of 1971, Murray was ready to leave Brabham – only to think again as bright spark Ecclestone offered fresh promise. It had been a tough season, in stark contrast to Jack Brabham's final Indian Summer of 1970. Tauranac had signed Graham Hill to replace his old partner, but the double champion was way past his best. Sure, Hill scored a final F1 win at Silverstone's non-championship International Trophy in the 'lobster claw' Brabham BT34, but Tauranac was left unimpressed, far preferring Aussie up-and-comer Tim Schenken. But in a thin year of unreliability Schenken wasn't about to stick around, and didn't care for what Bernie had to offer. He left for Team Surtees. Oops.

Instead, Brabham turned to promising Argentinian Carlos Reutemann as its new talisman.

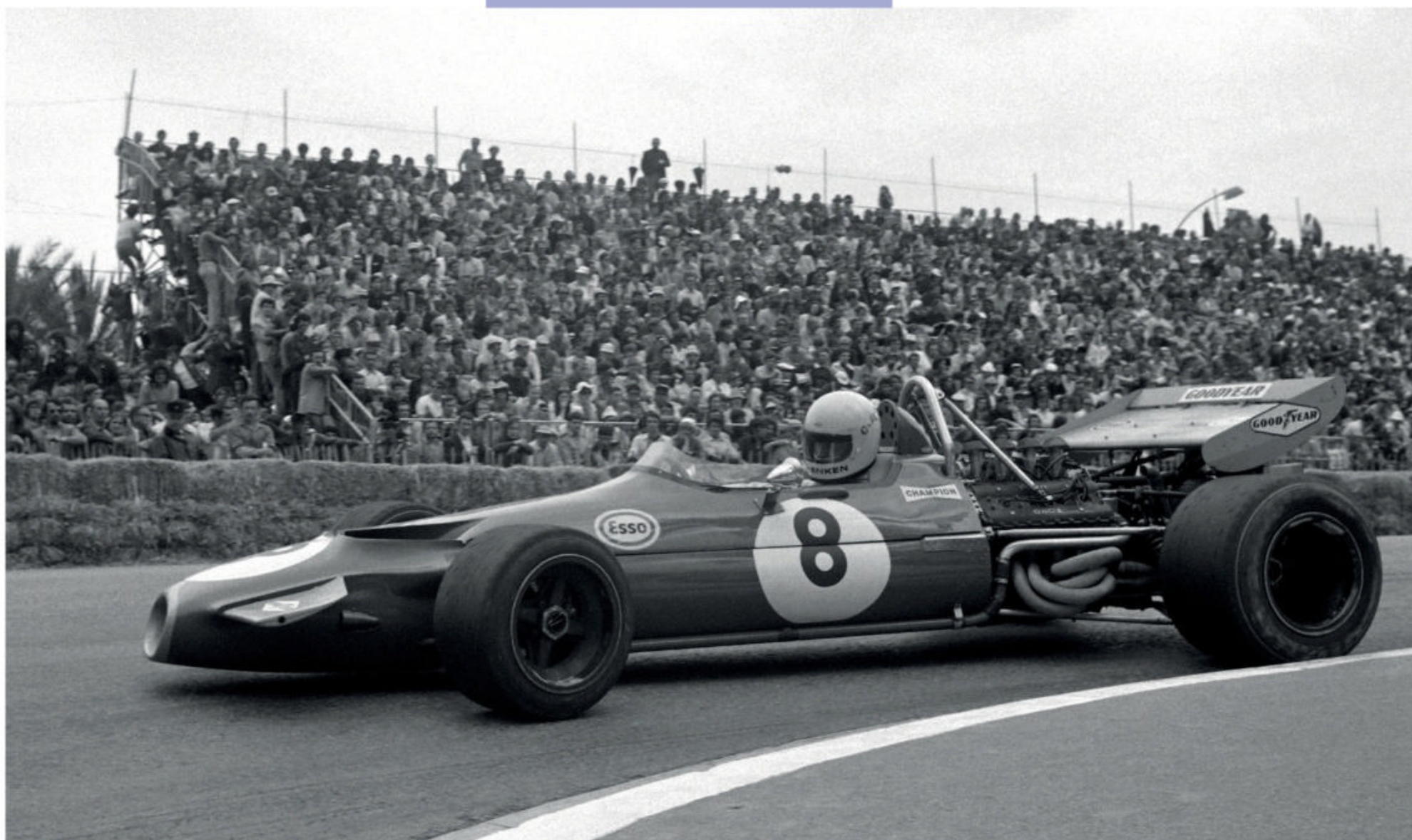
Tauranac gave him his break at the end-of-season non-championship Victory Race (in which Jo Siffert was killed), then Ecclestone properly picked up the ball for 1972. Tauranac was increasingly a mere employee and that was

After a disappointing 1971, when he managed just one podium, Tim Schenken opted not to be part of the 'new' Brabham

never going to work, especially when Ralph Bellamy was hired from McLaren to design the BT37. As other new faces arrived, including Lotus veteran mechanic Bob Dance and ex-Rob Walker man Herbie Blash, Tauranac soon departed. But Ecclestone didn't change everything: Brabham remained Brabham. Why? The company had a profile and reputation built on solid foundations. Pragmatism always beat ego for Bernie – and anyway, 'Ecclestone' didn't exactly sound racy.

The new era, amid continuing transition, started well when Reutemann qualified his white BT34 on pole for his home race in Buenos Aires. But in sweltering conditions and on the same soft Goodyears he'd qualified on, Carlos faded on race day. Still, he scored his first F1 win in a non-championship Brazilian GP at Interlagos.

Hill, retained out of necessity more than merit, gave the BT37 its bow at the International Trophy, before Reutemann broke an ankle in an F2 race. He returned, but in combination with Hill and Wilson Fittipaldi (brother of Emerson), struggled to achieve more in 1972. The team had little to show for the season bar some broken Cosworth DFVs and a deficit of £80,000.



Murray had designed Alain de Cadenet's Duckhams Le Mans car on the side and was eyeing a job at Tecno when Bellamy left for Lotus. Ecclestone made a typically gut-instinct call to trust his young employee and promoted him, giving Murray a remarkably free hand. Prompted by conversations with Bellamy, Murray came up with the novel triangular-monocoque BT42. From the start, Gordon Murray trod his own path.

John Watson gave the car its debut at the Brands Hatch Race of Champions, only for a stuck throttle to leave him trapped in the wreck with two broken legs. Wattie would be back. Reutemann and Fittipaldi pressed on with a pair of striking BT42s at the Spanish GP, where Brabham also rolled up with F1's first articulated transporter, converted from a Trust House Forte demonstration unit. Another small landmark in Ecclestone's quiet revolution.

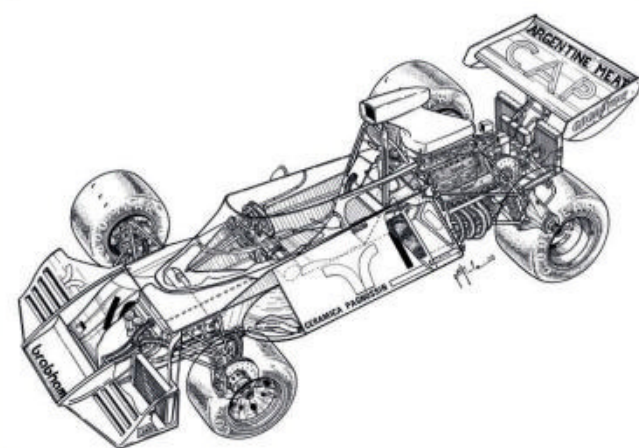
The mid-1970s: what a free-wheeling time of F1 innovation, technical diversity and original thinking. Lotus 72, Ferrari 312T, McLaren M23, Tyrrell P34 six-wheeler... Brabham BT44. Entirely subjective, of course, but Murray's (first) masterpiece was the most striking of a stunning



Ecclestone with Bob Dance (right) and F1's first articulated transporter, a former Trust House Forte demo unit, at the 1973 Spanish GP



Reutemann (left) with Ecclestone. Bernie's first points-scoring win as Brabham owner was Carlos's victory in the 1974 South African GP



Gordon Murray's first Brabham was the BT42. Different to anything else around at the time, the car featured a triangular monocoque

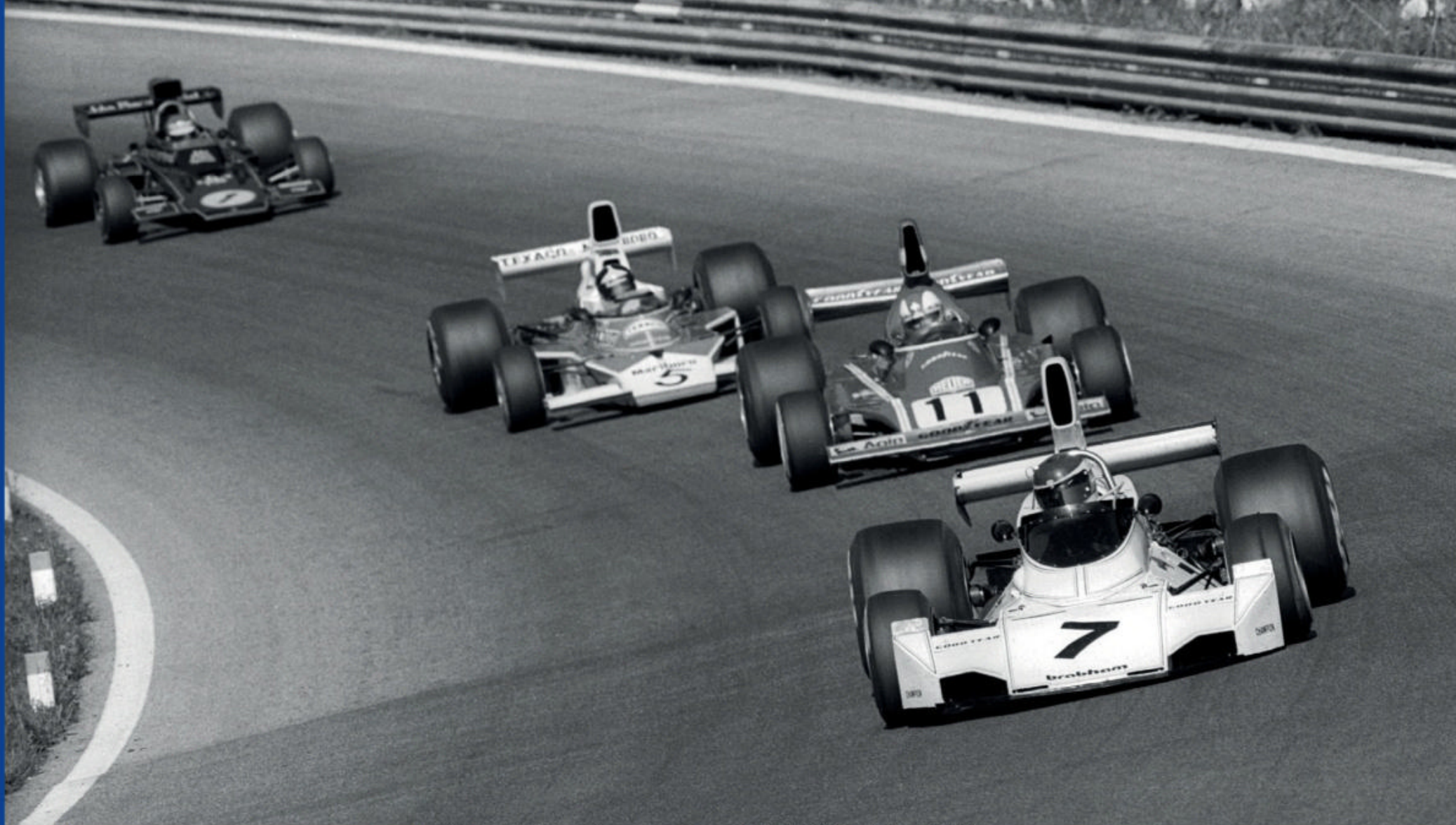
bunch and bristled with its creator's restless need to break new ground: rising-rate suspension, clean airflow over a heavily swept-back triangular cockpit – and underneath, early experiments with what would become known as ground-effect aerodynamics. Except Murray didn't fully understand the forces he was playing with in 1974. The V-shaped skirt under the monocoque created an area of low pressure, but harnessing that game-changing downforce would come later

– and first via the enemy at Lotus.

The BT44 was born perfectly formed in plain white with subtle pinstripes when it first flew in 1974 – but the lack of sponsorship in F1's blossoming commercial age was a nagging concern, Ecclestone having lost Marlboro from his hook to McLaren. He fell back on pay drivers (not for the last time) as Richard Roberts and then Rikky von Opel joined Reutemann. At home in Buenos Aires Carlos drove away into the

lead, only for his BT44 to splutter low on fuel in the closing stages. Agonising as it was, a churn had been missed amid pre-race fuelling chaos. Reutemann never would win his home race.

The first points-paying victory came at Kyalami – proof the BT44 was as good as it looked. But consistency from both team and enigmatic, moody driver was not a Brabham strong point and a title challenge remained out of reach. The car was slippery on the fast circuits, Reutemann ►



1974 ended well with a Reutemann win in Austria (above) and a 1-2 for the team at Watkins Glen (right)



winning again at the Österreichring and for a third time that year at Watkins Glen. Even better, his new Brazilian team-mate, Carlos Pace, now gave Brabham its first true double-pronged attack. Pace made it a team 1-2 in the US.

The Brabham cocktail gained added vim in 1975 when Ecclestone landed a sponsor worthy of the BT44B's angular contours. Has a car ever looked better in Martini's striking blue and red stripes? There was increasing substance behind the style, too. Circumstance and poor reliability robbed Brabham of another 1-2 at the Argentinian season opener, but while the wrong tyre choice cost Reutemann at Interlagos, the 'other' Carlos stepped up see off Emerson Fittipaldi for a Brazilian 1-2 – Pace's only F1 win. Then the Brabhams locked out the front row at Kyalami, only for Jody Scheckter's Tyrrell 007 to best them in the race.

At this stage, Brabham looked set fair as a title contender – only for a couple of factors to derail the bid. First, Niki Lauda had just got his hands on Mauro Forghieri's classy Ferrari 312T. Second, Ecclestone distracted Murray with an Italian lump of a project that spoilt not only 1975, but most of the rest of the decade. BT44B development halted as Bernie sealed a deal for Alfa Romeo flat-12 power.

The logic was sound enough. In a 'garagiste'

ECCLESTONE DISTRACTED MURRAY WITH AN ITALIAN LUMP OF A PROJECT THAT SPOILT NOT ONLY 1975, BUT MOST OF THE REST OF THE DECADE

era of DFV predominance, it made sense to seek an edge in an alternative – and look what Ferrari was doing with its 12-cylinder. The trouble was

the Alfa was only proven in sportscars, scoring an uncontested world manufacturers' title in 1975. Sure, it had power: 510bhp at 12,000rpm versus 465 for the DFV, 450 for the BRM V12 and 500 for the Ferrari 312. But it was also heavy, thirsty and unreliable. Alfa amounted to a long and winding cul-de-sac for Brabham.

Reutemann won just once in 1975, at the Nürburgring, before the new era dawned at Alfa's Balocco test track in October with the unveiling of the BT45. This was a departure in more ways than one. Murray set aside his penchant for triangles with a slab-shaped pontooned monocoque, not just to accommodate the flat 12 but also the four fuel cells required to feed it. Its wide track and twin airboxes combined with *that* livery to make a statement, but at 625kg the BT45 was overweight. Reutemann described it as an "old lady" after his first tests – although the comparison to the bloater F1 breed of today, weighing in at a scale-creaking minimum of 798kg, cannot be passed without mention.

Murray liked the Italians, but was generally non-plussed by their engines: two were rarely the same... As for Reutemann, his patience ran thin – then ran out completely during a DNF-filled 1976. Carlos negotiated a release after the Dutch GP to head straight into post-Niki Lauda-fiery-accident Ferrari. Brabham was all at sea.

A move from New Haw to Chessington broke Jack Brabham's final link early in 1977 as the BT45 lost a bit of weight, turned from white to red, and gained John Watson, newly high and dry after Penske's withdrawal. Both Wattie and Pace were contenders in Argentina, only for

Scheckter's new Wolf to snatch the race away. Pace's blatant jumped start at home in Brazil allowed him a brief lead and he qualified on the front row in Kyalami, so things were looking up... until awful tragedy swept him away. As Watson qualified on pole at the Race of Champions in the revised BT45B, devastating news floored the team: Pace had been killed in a light aircraft accident. Like Stuart Lewis-Evans and Jochen Rindt before him, the Brazilian was among the few to become truly close to Ecclestone. Had he lived there'd have been no need to hire Niki Lauda, was Bernie's telling tribute.

For now, Hans-Joachim Stuck took Pace's seat as Watson stepped up to lead. Pole at Monaco and front row starts at Zolder and Anderstorp should have led to more – indeed, he could have won in Sweden without a Scheckter punt. But the

real blow was Dijon in July when he led Mario Andretti's Lotus convincingly until a misfire cut in a mile from the flag. Second was scant reward for a heartbroken Wattie. To rub it in, he led James Hunt at Silverstone, only for a fuel system malfunction to intervene again.

Brabham needed more than a change of luck. Ecclestone snatched a discontented Lauda away from Ferrari despite his title success, Niki bringing Parmalat backing to replace Martini, while Murray turned to alchemy in the latest quest to uncover that old racing grail: the unfair advantage. But this time it was his turn to misfire.

The BT46 remains his most fabulous failure. Surface cooling via heat exchangers made from weight-saving dip-brazed aluminium? Genius... had it worked. Its water boiled even on cold English winter test days and Murray hastily fell

back on the BT45, then cobbled front-mounted radiators into the BT46. The only surprise was how competitive Lauda and Watson proved in the early rounds. The trouble was Lotus: the Type 78 was one thing, but the 'Black Beauty' 79 was a proper game-changer, and Murray knew it. He needed to respond.

The BT46B 'fan car' remains F1's most ingenious and outrageous innovation. Colin Chapman was furious, and so was Ken Tyrrell – especially as he almost had his own, had 008 designer Maurice Phillippe made his fan work. Following tests at Balocco and Brands Hatch, where mechanics covered the rear-mounted fan with a conveniently sized dustbin lid to thwart prying eyes and camera lenses, Brabham rocked up at Anderstorp, kept its powder dry in practice and blew Lotus away in the race. ▶



After a solitary victory in 1975, Brabham had to wait until the 1978 Swedish GP for its next win, with the infamous BT46B

Lauda passed Andretti with laughable ease.

Of course the fan was primarily for cooling – its aero-suction effect was merely a secondary benefit... The governing body moved to ban fans, but it's crucial to remember the BT46B itself never was. Lauda's Swedish win stands as a beacon for clever – and legal – F1 innovation. Murray was frustrated that Bernie backed down so easily, withdrew the cars after Anderstorp, and didn't fight the team's corner, but as the head of FOCA (Formula One Constructors' Association) Bernie was already looking at the bigger picture and the 'greater good'...

Back to the drawing board, then. Murray demanded a V12 from Alfa to allow for a true ground-effects contender – and was surprised when the Italians delivered. The BT48 – the BT47 was a stillborn development of the fan car – rolled out a few days before Christmas, featuring the first F1 use of carbon-fibre composite panels, plus brand new sliding skirts and a low-slung wing. Like Chapman's Lotus 80, it was a step too

BY THE END OF 1979 IT WAS ALREADY CLEAR ECCLESTONE AND MURRAY HAD FOUND BRABHAM'S NEW MUSE

far and Brabham was forced to row back in 1979, as Watson made way for a young talent fresh from success in British F3: Nelson Piquet was ready to fly – if only the Alfa V12 would let him.



Lauda's second win for Brabham in 1978 was in Italy, but the Alfa engines were still not a consistent match for the Cosworth's

The cars that emerged from Gordon Murray's drawing board would eventually make Brabham title contenders again by the end of the 1970s



In a season marked by disenchantment, Alfa divorce became inevitable as Murray gladly prepared for a DFV return. Lauda did win a race in the BT48, a non-championship thrash at Imola following the Italian GP. But by Canada the Cosworth-powered BT49 was ready – and Niki had lost interest. He quit after first practice in Montréal, then jetted off to launch his own airline and a new life. As it turned out, he'd be back, with McLaren in 1982, so it's a stretch to say Piquet's speed scared him off. But by the end of 1979 it was already clear Ecclestone and Murray had found Brabham's new muse.

As the new decade dawned, ground-effect missiles on 2000lb springs found their critical centres of pressure. Williams and its Lotus 79-influenced FW07 had emerged as the new force, but Brabham and Piquet gave Alan Jones a hard run for his title in 1980. Piquet won at Long Beach, Zandvoort and Imola, then headed to Montréal with a one-point lead. Scurrilous talk of special fuel swooshed around Nelson's stunning pole lap, but at the first corner the title rivals clashed and, in the spare car for the restart, Piquet's challenge went bang with a piston failure. Still, there was always 1981.

Amid the cacophony and distraction – to Ecclestone at least – of the raging FISA/FOCA war and the battle for control of F1, Piquet and Brabham duelled with Williams once more. ►

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But instead of Jones, it was old ally Reutemann who emerged as the title threat. Tempers frayed over flexible skirts, minimum ride-height circumventing hydro-pneumatic suspension and lightweight qualifying cars – already a Murray-era Brabham tradition – while form fluctuated with other teams on the merits or otherwise of Michelin vs Goodyear tyres. It was a tumultuous season, which ended in suitably off-the-wall circumstances in the car park of the Caesars Palace casino, Las Vegas.

In blistering heat and facing a one-point deficit, Piquet was on the back foot as Reutemann claimed pole – only to pull his famous disappearing act in the race. What happened to Carlos that day remains a tantalising mystery, but he sailed backwards for whatever reason to a miserable eighth as unfit Piquet fought



At the 1981 British GP Brabham trialled a BMW-powered BT50 in practice, and would go on to use the German engines until the end of 1987

exhaustion to score fifth and the two points he needed to become Brabham's first world champion since Denny Hulme in 1967.

Finally, Ecclestone and Murray had the title their 10-year quest deserved. But the best was yet to come. At Silverstone, Piquet had left everyone gasping with the straight-line oomph of the whistling Brabham-BMW BT50 when he gave it a blast through practice. The DFV's day wasn't yet spent, but it was numbered – and Brabham was champing to turn up the wick and embrace the turbo revolution. 



Piquet came into the team with high hopes but 1979 was just one long list of mainly Alfa engine-related retirements for him and Lauda



Ecclestone with Lauda and Piquet (right) in 1979. By the end of the season Lauda decided he'd had enough and opted to bow out of F1

Despite exhaustion, Piquet managed to claim the two points he needed in Las Vegas to beat Brabham old boy Reutemann to the 1981 title



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MAURICE HAMILTON'S

ALTERNATIVE VIEW

In a new regular column, Maurice Hamilton draws on his many decades of grand prix writing experience to give an alternative take on unusual F1 events past and present. This month, it's jewellery...

PICTURES  **motorsport**
IMAGES



I NEVER THOUGHT THE day would come when I'd look at Lewis Hamilton and think, 'Titanic'. Not 'titanic' in the sense of 'monumental' or 'immense' (all of which could be applied to the multiple world champion with reasonable justification); but 'Titanic', as in the ship that hit an iceberg and sank so famously in 1912.

This bizarre connection was made while listening to Lewis's reaction to the equally peculiar FIA edict concerning an F1 driver's personal apparel. You know, the bulletin on the weekend of the Australian GP that mentioned drivers' piercings and underpants and was listed just after legislation on serious matters such as yellow flags and track hazards. In summary, document five reminded drivers that the wearing of jewellery is prohibited – the race director, Niels Wittich, subsequently adding the subject of proper flameproof underwear during what you might say was an appropriately named 'briefing' affecting a ticklish area.

No F1 driver in their right mind would don anything other than the very best fire-resistant material. What they wear underneath that

flameproof layer is, I would have thought, up to them. In any case, I'm not aware of any brand of underpants claiming the ability to sit in a fire for 30 seconds as a comfort zone benefit, along with 'four-way stretch, freedom of movement and a pouch to keep everything in place' (to quote the blurb from one purveyor of pants).

Even if flameproofing was an option offered by Marks & Spencer, Calvin Klein and the rest, would drivers, in the interests of a less-intrusive FIA

DOCUMENT FIVE REMINDED DRIVERS THAT THE WEARING OF JEWELLERY IS PROHIBITED

inspection, be required to wear them outside their Nomex long-johns in the manner of Superman? (*Or Sebastian Vettel for that matter! ed*). You could have sold tickets to hear Kimi Räikkönen's response to such a request had he still been in F1.

On the question of jewellery, Hamilton looked as non-plussed as everyone else when the matter

was raised. Referring to his earrings, Lewis said: "They're literally welded on, so I'd have to get them chopped off...they'll be staying." The only surprise to me was his reference to welding.

My original understanding of the art stemmed solely from the hard men I used see at the end of a day's graft in Belfast's Harland & Wolff shipyard. You'd find them in the dockside pubs on a Friday night working through their pay packets and pints of Guinness. Perched high on scaffolding planks around the emerging shape of a vast ship, they were as tough as the sheets of steel being fused into place.

Welding was beyond my remit in the 1960s, as the phantom reader of motorsport weeklies while supposedly studying for some qualification or other. I did learn more in later years when talking to the mechanics who built world championship Tyrrells in a Surrey woodyard. But even now, all I know is that various forms of welding stretch back to the days when the Belfast boys drove massive rivets into the sides of the Titanic. Most of the methods appear to involve some sort of white-hot flame. Thinking about it, having a jeweller, no matter



Jewellery was the norm for Stirling Moss (above) whilst Jackie Stewart famously used to remove his Rolex (left) before getting in his car. Lewis Hamilton made a point in Miami with his extra necklaces, after his 'welded on' earrings became an issue



how expert, approach your earlobes with a blow torch must make running side-by-side with Max Verstappen at 180mph into Copse a piece of cake.


Jackie Stewart was the first driver I heard mention the potential hazards of wearing jewellery in a racing car. It was not something you thought about in the 1950s, as the likes of Stirling Moss sported a watch on one arm and an identity bracelet on the other. These seemed as reasonable as the polo shirt allowing full view of his sun-tanned limbs and accompanying accoutrements.

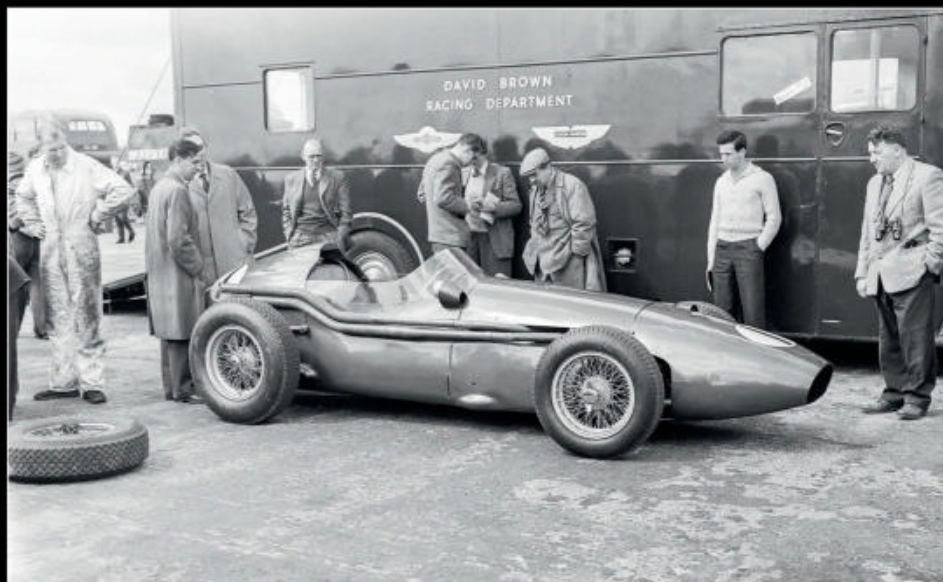
By the time Stewart arrived in F1 in the mid-60s, overalls and gloves covered timepieces and trinkets. But the Scot had become aware of the risks associated with anything worn on the arm being caught by debris in the event of an accident. When he spoke of a driver's hand being 'degloved' of skin, little was left to the imagination.

Stewart might have been one of the first to remove such personal effects before climbing into the cockpit, but it presented a commercial problem which, typically, the canny wee man from Dunbartonshire used to his advantage. Jackie bought his first Rolex in 1966, a proud purchase that had as much to do with brand association as it did with actually telling the time. It later became part of his routine to remove the watch and hand it to Ken Tyrrell – and no one else – before stepping into the cockpit. (Tyrrell said he didn't mind playing a part in this ritual, his only objection being that he had to hand the watch back as soon as the race was over).

Stewart's attachment to the Rolex soon went beyond wearing it on his left wrist. It didn't take long for financial considerations to come into play. Rolex made the most of this by producing a clever advert stating: 'There's only one time world champion Jackie Stewart takes off his Rolex: when he puts on his fireproof underwear.'

Stewart's research into fire protection revealed the risk of severe burning caused by medallions and such quickly overheating in a blaze. It was a point that had to be made back in the day, even though it seems obvious now and hardly worth reminding drivers of the latent threat.

But that's what Niels Wittich did in Australia and again in Miami. Clearly keen to get away from his predecessor's now infamous 'Help Line for Distressed Team Principals', the race director has been laying down the law – and rightly so – in relation to matters such as track limits and Safety Car restarts. But to treat 20 F1 drivers as karting novices seemed like...well, pants in every sense. 



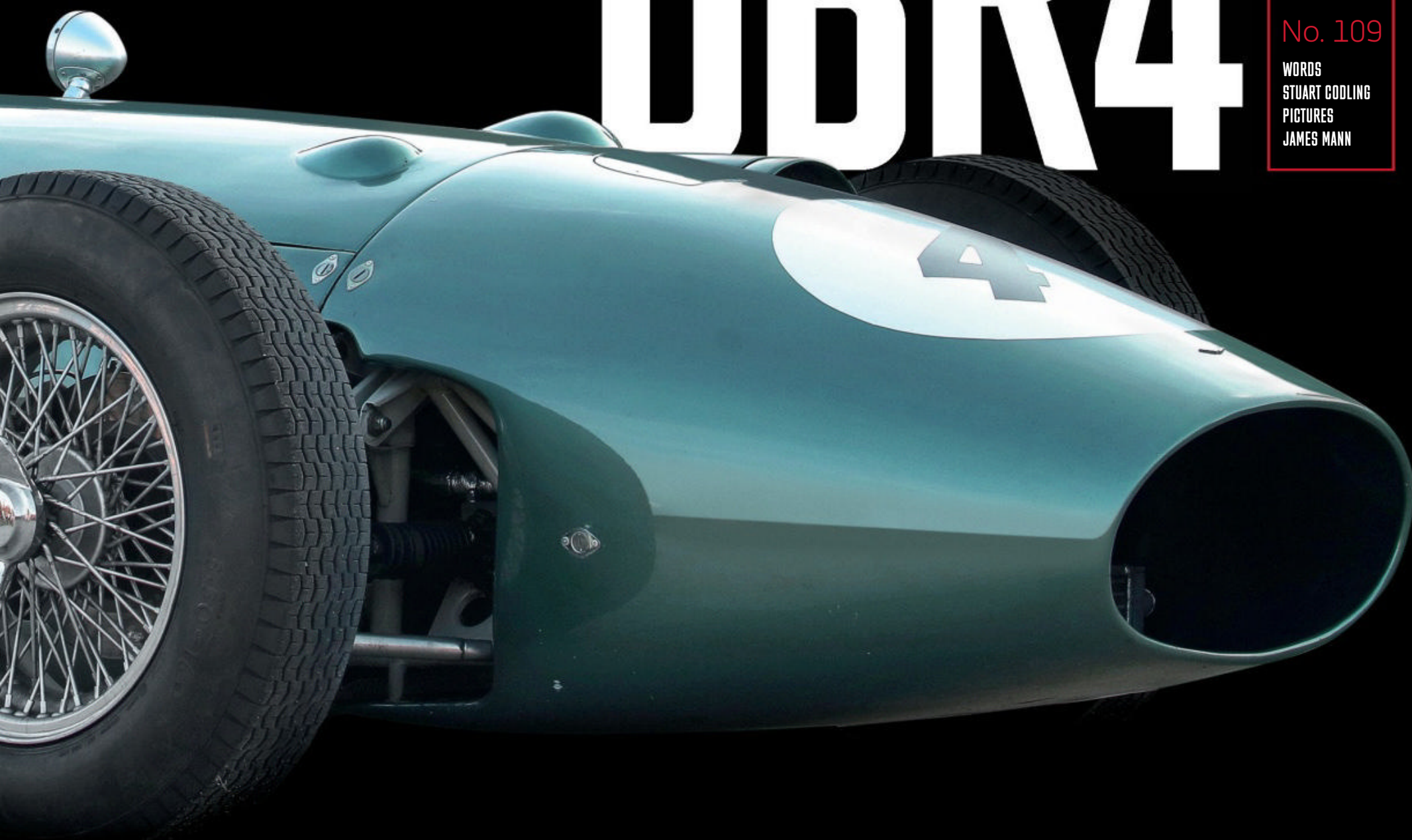
ASTON MARTIN DBR4

Aston's inaugural
F1 racer was a car
already past its time

NOW
THAT
WAS
A
CAR

No. 109

WORDS
STUART CODLING
PICTURES
JAMES MANN



U**nsuccessful if not unloved** – within its small niche – the Aston Martin car company had already been passed around like a tray of muffins when it found its way into the ownership of agricultural vehicle entrepreneur David Brown in 1947. Co-founders Lionel Martin and Robert Bamford went into business together in 1913 as Bamford & Martin, building Singer-based specials, but astutely recognised a more evocative name was required: Aston Martin came about through a combination of Martin's name (his family business was where the money came from, after all) and that of the Aston Hill racing venue where Martin was an energetic competitor. The first Aston Martin rolled out of the company's small Kensington workshop in 1915, but within a decade the partners had split and the company went into receivership.

Owners came and went until, in October 1946, Brown was perusing his copy of *The Times* newspaper and came across a classified advert for a "High Class Motor Business". As is the way of those successful in enterprise Brown was interested, but not enough to pay the asking price of £30,000 without inviting the seller, Sir Arthur Sutherland, to adjourn for a while and sharpen his pencils. They settled at £20,500. While he was in the mood to spend, Brown also acquired the Lagonda company, whose key asset was a new straight-six engine co-developed by none other than WO Bentley. A new range of Aston Martin sportscars powered by this engine and carrying Brown's initials would transform the company's fortunes.

Brown was wise to the value of racing in rebuilding the brand and recruited the talented manager John Wyer to form Aston Martin's racing department, with a view to competing in the upper echelons of sportscar racing – including Le Mans. A formidable and no-nonsense character, Wyer would go on to

ASTON MARTIN DBR4

NOW
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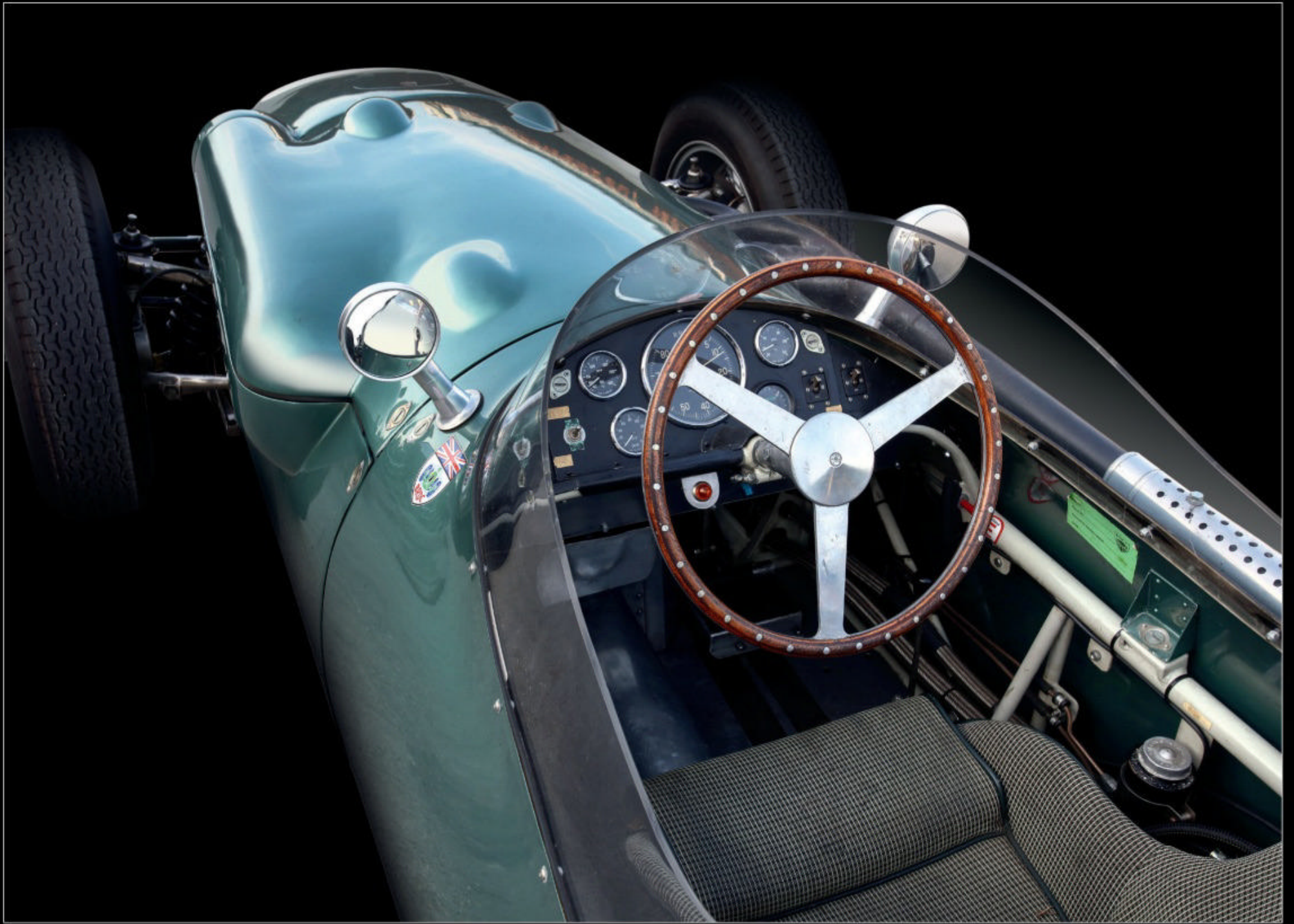
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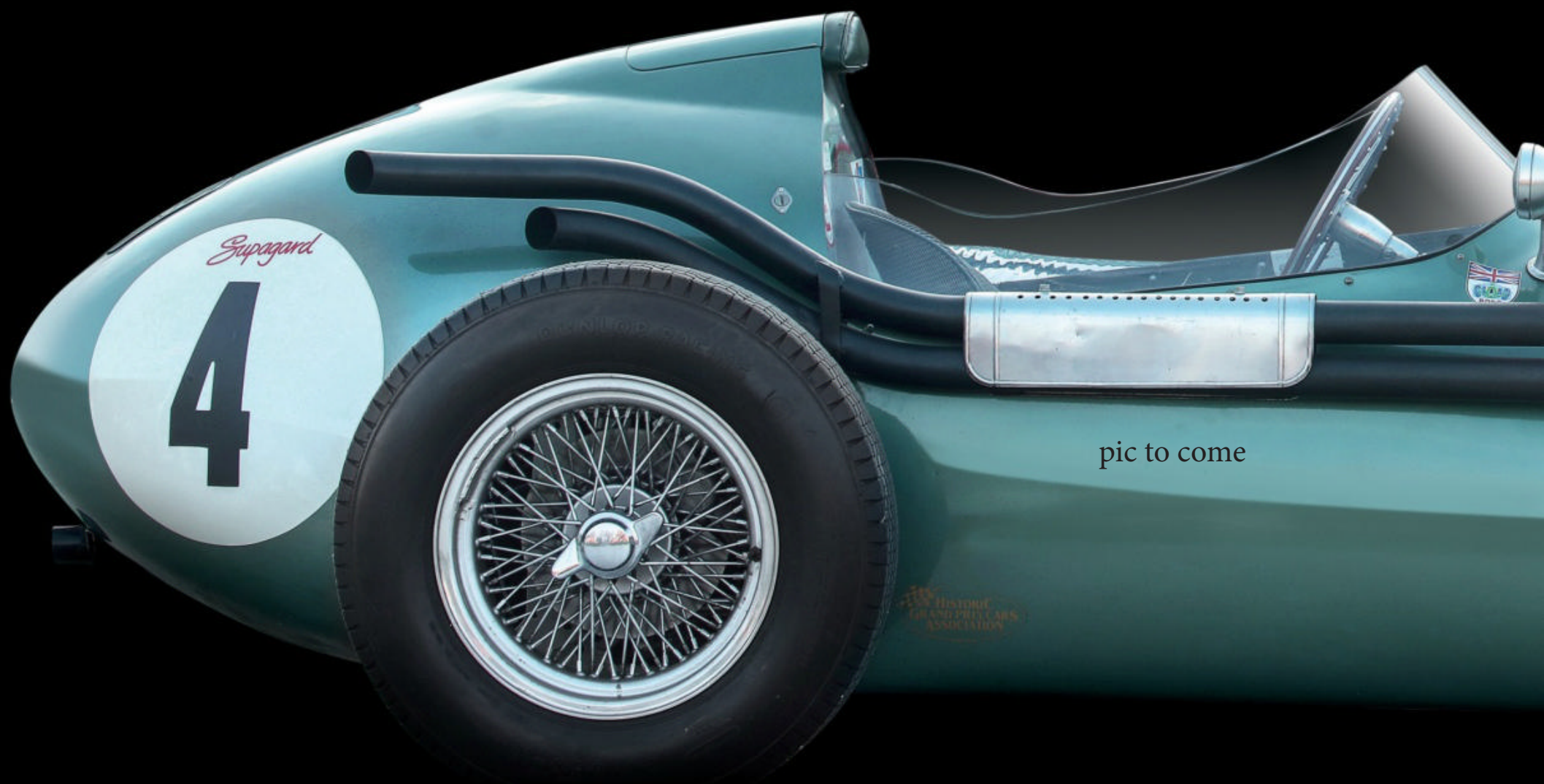
win the 24 Hours several times with different manufacturers. He acquired the nickname 'Death Ray' on account of the piercing glare with which he would regard those who incurred his displeasure. By the mid-1950s Aston was challenging the likes of Jaguar and Ferrari on track and Wyer was elevated to running the entire company. Reg Parnell, Britain's star racer of the immediate post-war era, was brought in to manage the team as well as race its cars. Parnell had been a key player in the foundation of BRM, and driven an Alfa Romeo to fourth place in the first world championship grand prix, and Formula 1 was very much on his mind.

The new 2.5-litre engine format introduced in F1 for 1954 tempted Aston enough to produce a prototype single-seater based on the DB3S sportscar, but Brown wasn't keen to sanction (or bankroll) a war on two fronts, especially against the might of Mercedes. Parnell raced the single-seater in the

THE NEW 2.5-LITRE ENGINE
FORMAT INTRODUCED IN
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ASTON ENOUGH TO
PRODUCE A PROTOTYPE
SINGLE-SEATER







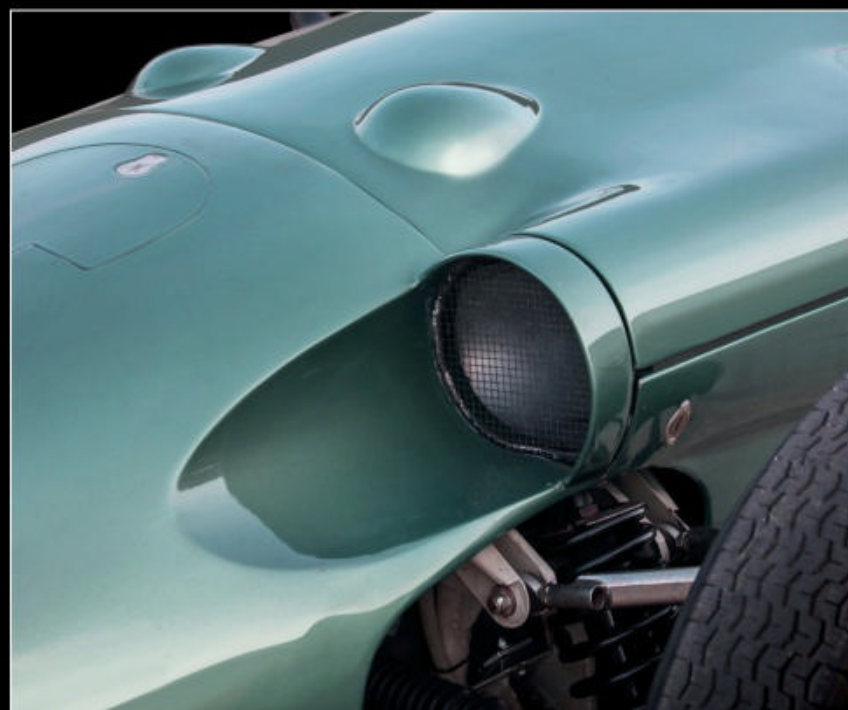
Tasman series over the winter of 1955 but, as Aston focused resource on the new DBR1 sportscar, it became clear that if there was a way forward in F1 it would be through using the DBR1 as a base. By then, Mercedes had decided to withdraw from motor racing, leaving the path (relatively) clear.

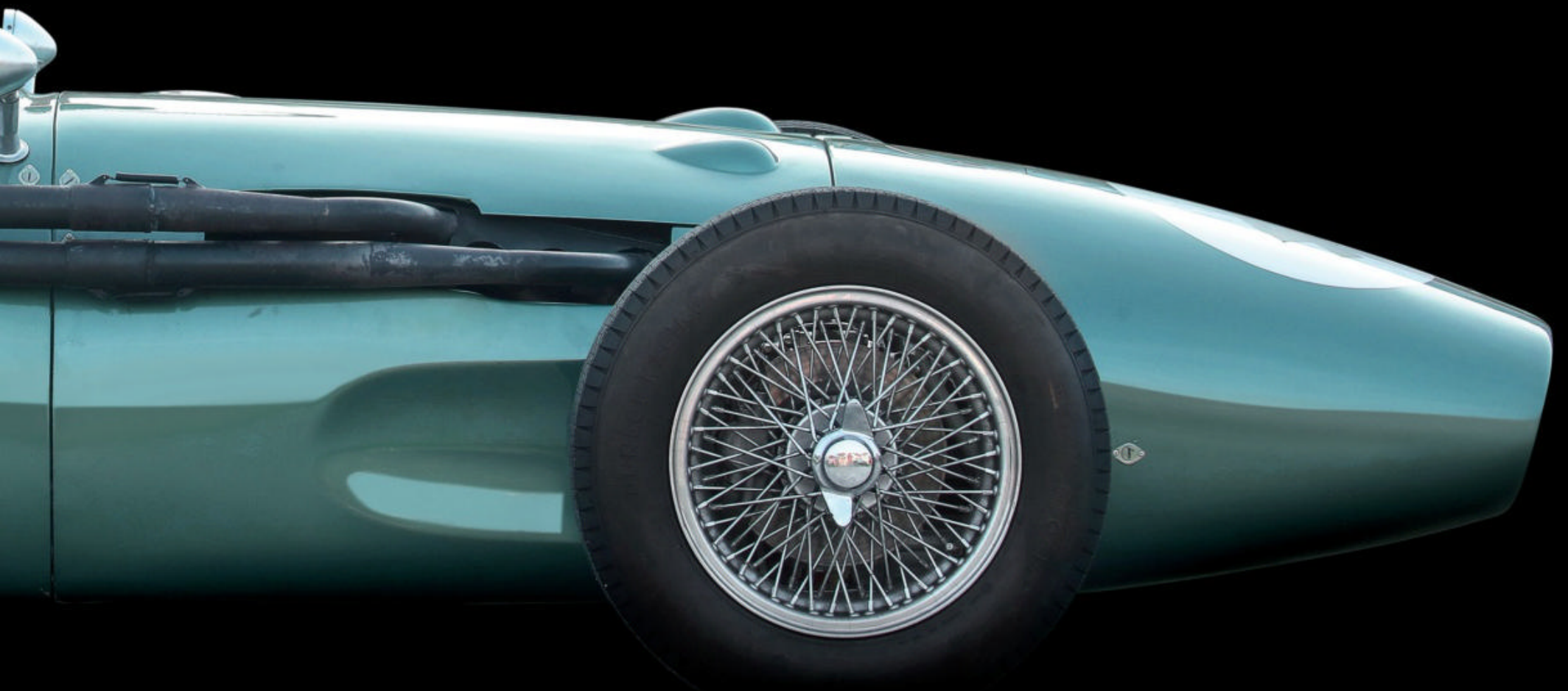
Ted Cutting's DBR1 design took advantage of new rules in sportscar racing which cut the previously mandated ties between racing and road cars. Free from the requirement to base his new car on a road-legal model, Cutting adopted a spaceframe chassis concept. It was relatively simple to adapt this to accept an aluminium single-seater bodyshell but, given the company's focus on the world sportscar championship and preparing the DBR1 for the 1956 Le Mans 24 Hours, the F1 project was set aside.

Promising and competitive though the DBR1 was, cracking Jaguar's supremacy in sportscar racing would take further development over the coming three years. In 1957 Tony Brooks,

racing Astons in the sportscar world championship while on the Vanwall works roster in F1, tested the DBR4 F1 prototype. Would the car have been competitive at this time? In shape and mechanical layout it closely resembled the Maserati 250F with which Juan Manuel Fangio was winning the world championship: disc brakes, double-wishbone front suspension with a De Dion axle at the rear, and a front-mounted engine slightly offset so that the driver was located beside the driveshaft rather than on top of it. Brooks rated the brakes, handling and gearbox but was less complimentary about the power developed by the engine, a short-stroke version of the 2.9-litre straight-six Cutting had modified from the Lagonda concept.

Failure at Le Mans and in the sportscar world championship in 1957 prompted Aston Martin to continue to focus on that arena the following year, since Le Mans was David Brown's abiding goal, so the DBR4 spent another season sitting on the sidelines. As Cutting said, "We didn't have the money or the manpower to do both





BY 1959 ASTON FELT READY TO EMBARK ON ITS F1 ADVENTURE. THE PROBLEM WAS THE NATURE OF THE CHAMPIONSHIP HAD CHANGED

racing cars, airily pronouncing that the horse pulled the cart and not the other way around, but by 1960 even he would be furtively signing off on such a concept. Aston Martin courted Jack Brabham, who had won (with Stirling Moss) the 1958 Nüburgring 1000kms in a DBR1, but he elected to stick with Cooper for 1959 – which was the right decision.

Carroll Shelby joined Roy Salvadori as an Aston Martin works driver and it was they who gave the car its maiden race appearance in the non-championship BRDC International Trophy at Silverstone in May 1959. Salvadori was third on the grid, set fastest lap and finished second, 15.6s behind... Jack Brabham's Cooper. Shelby's race was more in line with what was to come: he was classified sixth, two laps down, having lost fifth gear and run the engine's bearings through over-revving. Back at base, a strip down revealed the bearings in Salvadori's engine to be in an advanced state of wear. If it could barely last 50 laps and an hour and a half of racing around Silverstone, ►

sportscars and F1." Wyer would later describe the decision to park the DBR4 in a corner of the workshop as "fatal".

By 1959 Aston felt ready to embark on its F1 adventure. The problem was the nature of the championship had changed while the company dithered. Stirling Moss's victory in the 1958 season opener, driving a rear-engined Cooper chassis, was a portent of things to come. Enzo Ferrari was famously dismissive of rear-engined

NOW THAT WAS A CAR

No.109

ASTON MARTIN DBR4





**THE COMPANY'S DECISION TO MOVE FORWARD
WITH A FRONT-ENGINED DESIGN FOR 1960
SUGGESTED A LACK OF AWARENESS OF F1'S
DIRECTION OF TRAVEL**

what chance 100 laps and nearly three hours around Monaco? Aston didn't race at the Principality but returned for the Dutch GP at Zandvoort, where both drivers retired with engine failure.

In June Salvadori and Shelby shared a memorable victory at Le Mans in a DBR1, Aston Martin's only win in the 24 Hours. The team did not return to grand prix racing until mid-July's British GP at Aintree, where Salvadori equalled Brabham's pole time and finished sixth, hampered by the engine revs being capped at 7,000rpm in the hope of it surviving the 225-mile race. Inconvenienced, too, by sitting in a pool of fuel, since the tanks had been brimmed in a bid to reduce the number of pitstops.

Two new 'lightweight' chassis were built but only one was raced, by Salvadori in the Italian Grand Prix at Monza, where he ran as high as seventh before retiring with a blown engine.

The DBR4 closed its results book with 10th place for Shelby in the chassis he had raced all year.

Indubitably, dilution of focus contributed to the problems Aston Martin experienced in its first year of F1 competition. The company had ostensibly withdrawn from the sportscar world championship and planned only to race at Le Mans, but allowed itself to be persuaded by the Sebring 12 Hours promoters to race there, and was unable to resist the temptation of entering the Nürburgring 1000km when Stirling Moss signalled that he wanted to run there (in mitigation, that proved to be one of Stirling's finest-ever drives). The Le Mans victory then put Aston in championship contention, and so it entered three cars

NOW THAT WAS A CAR

No.109


ASTON MARTIN DBR4

in the Tourist Trophy at Goodwood where another Moss win sealed the silverware.

All of this contributed to a failure to understand the DBR4's shortcomings. The weight issue was only partially addressed by new, lighter chassis. And while the handling was sweet enough by front-engined standards, the rear-engined cars were better – especially when independently suspended at the rear, which the DBR4 was not. The company's decision to move forward with a front-engined design for 1960 suggested a lack of awareness of F1's direction of travel.

While sweet-sounding, the engine was another key issue: it never made its claimed 270bhp – 250 being nearer the mark – and it couldn't sustain the 7800rpm required to reach that figure for long before ruining the bearings. In three-litre sportscar racing form the straight-six was unbreakable, which contributed to the engineers' inability to trace the problem. Initially the conrods were thought to be flexing because of the high revs, and it was only when stiffer ones also failed that an issue with the oil system came to light. The crankshaft oilways were drilled at the points where each piston was at the top of its stroke, and at high revs the dynamic forces were such that the flow stalled. In the lower-revving sportscar engine this never became a problem.

"It was a good car simply overtaken by events," was Wyer's view of the DBR4. It was entered in just two more F1 races – the 1960 Silverstone International Trophy and the Dutch GP – though Aston Martin pulled out of Zandvoort when the promoters said they would only pay starting money to the top 16 qualifiers. Two DBR5 chassis were ready for Silverstone, but fuel injection and independent rear suspension did not address the car's fundamental flaw: the engine was in the wrong place.

At last Wyer and Brown grasped that a rear-engined car was required – and Brown was insufficiently sold on the merits of F1 competition to pay for it. The Aston Martin name duly vanished from F1 – and at least five more custodians of the brand and a receivership lay in store before it would be seen again... 

RACE RECORD

Starts 8
Wins 0
Poles 0
Fastest laps 0
PoPodiums 0
Championship points 0

SPECIFICATION

Chassis Steel spaceframe
Suspension Double wishbones with coil springs/dampers (front), De Dion tube with trailing arms and torsion bars (rear)
Engine Naturally aspirated straight-six
Engine capacity 2493cc
Power 250bhp @ 7800 rpm
Gearbox Five-speed manual
Brakes Discs front and rear
Tyres Avon (1959), Dunlop (1960)
Weight 575kg
Notable drivers Roy Salvadori, Carroll Shelby





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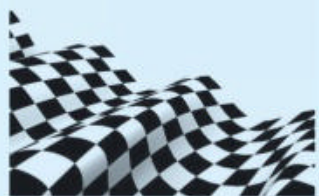
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FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 5

THE MIAMI GP IN
5 KEY MOMENTS

Verstappen claimed his third win of 2022, repelling a late Leclerc attack (below)



1 Ferrari has no answer to Red Bull race pace

Another grand prix dictated by fine margins of top speed and tyre degradation played out in Red Bull's favour as Max Verstappen made a decisive recovery from setbacks earlier in the weekend to beat Charles Leclerc by 3.786s.

Ferrari's F1-75 is the stronger of the two cars in cornering performance but Red Bull's Honda power unit offers greater electrical deployment on the straights. The Red Bull is usually gentler on its tyres too. For Miami Ferrari sought to mitigate the straightline issue by bringing a low-drag rear wing (or "depowered", as Ferrari described it).

"If they are close to us [in the race] then it's going to be very difficult," said Leclerc after qualifying on pole position.

Leclerc's pole owed much to a disrupted programme of practice for Verstappen, who was confined to the garage by overheating, gearbox and hydraulic issues. Only in FP3 did he complete any meaningful running, and the lack of familiarity with

the track contributed to him getting out of shape through Turn 5 on his second run in Q3 as both Ferraris beat his earlier time.

"I was still figuring out a lot of things in terms of braking," said Max. "You cannot afford that on a new track... we can do so much better by operating a lot cleaner and smoother."

Although Verstappen hadn't even done a practice start, he made a clean getaway to go around Carlos Sainz at Turn 1 then force the second Ferrari to yield into Turn 2.. As in the sprint race at Imola, Leclerc was able to pull enough of a gap to be out of range by the time DRS was enabled on the third lap. Leclerc was safe enough for a while, but was having to work the Ferrari hard to establish enough of an advantage through the twistier first sector to counteract the gains the Red Bull was making on the straights later in the lap. Inevitably this took its toll on Leclerc's tyres.

By lap eight (of 57) Verstappen had closed to

within DRS range and when Leclerc had to quell an oversteer moment at the final hairpin, Max pounced and swept by into Turn 1. Though it looked as though Leclerc had capitulated, he later explained: "The grip was a disaster there on Friday and Saturday. I thought the right thing to do was to stay on the racing line and optimise the braking point."

Verstappen was almost five seconds ahead when Leclerc stopped at the end of lap 24. Red Bull was sufficiently relaxed to let Max complete two more laps before swapping him to the hard-compound Pirellis for the run to the flag.

Only the deployment of the Safety Car on lap 42 brought Leclerc briefly back into play but, although Max had passed the pit entry when the Safety Car came out, neither Ferrari had softer rubber available

PICTURES: STEVEN TEE; GLENN DUNBAR; SAM BLOXHAM



Revised front and rear wings improved the Mercedes W13's pace, but only sporadically

to capitalise on this. Leclerc launched a couple of attacks but Verstappen was able to pull clear again when the Ferrari ran too heavily over the kerbs at the chicane.

Despite pain from his Friday crash, and a lack of race fitness after early retirements in the previous two rounds, Sainz fended off Sergio Pérez for third. The second Red Bull was hampered by an engine sensor issue (costing around 25bhp) but Pérez forced his way by at Turn 1 after the restart, only to overcook it and allow Sainz to reclaim the position.

2 Mercedes builds confidence it can fight at the front

Fifth and sixth places for George Russell and Lewis Hamilton after a late blunder by Alfa Romeo's Valtteri Bottas might sound like another case of Mercedes lucking in, but there was evidence the team is beginning to solve some of the troubled W13's gremlins. Mercedes fitted a low-drag rear wing and unveiled an interesting new front-wing

concept in which the planes narrow and angle forward dramatically where they meet the endplate. Towards the centre the planes were more steeply angled, as they were in early-season spec, suggesting the new concept at the tips is helping set up the car's aero map as originally intended.

Merc's improved pace on Friday was encouraging and Russell was fastest in FP2, but he cautioned against too much optimism, saying, "I don't really understand it." Higher temperatures might have played a role in helping the W13 with tyre warm-up, which has been a weak point since the team has run a higher rear ride height than it would prefer.

Also, the car's bouncing problem hasn't gone away – and it was particularly noticeable on Saturday as the team evaluated some different setup options. Shorn of confidence, Russell was eliminated in Q2 and lined up 12th on the grid as Hamilton qualified sixth, eight tenths off pole.

For the race Russell started on the hard Pirellis and dropped to 15th on the opening lap, but managed his tyres perfectly. As others pitted ahead he rose through the order and by two-thirds distance was fifth, running consistently at a similar pace to the leaders – and discussing with the

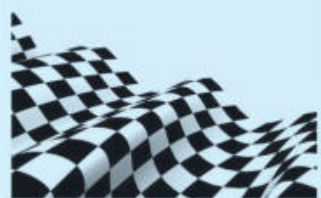


pitwall the possibility of a Safety Car.

Within a handful of laps that opportunity came in the form of the VSC called in the wake of Lando Norris colliding with Pierre Gasly, enabling Russell to pit and emerge seventh behind Bottas and Hamilton. That put George in a position to attack his team-mate from the restart, aided by Bottas watching the Merics duking it out in his mirrors and missing his braking point at Turn 17.

Russell strayed over the white lines passing Hamilton through the Turn 8-9 complex and had to give the position back, but then made the move stick at Turn 17 a lap later to claim fifth.

"We had a glimpse of the performance when we get it in the right spot," said team boss Toto Wolff. "The learning is exponentially tough at the moment." ▶



FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 5

3 Safety Car prompts midfield chaos

Perhaps it was because the first 40 of the 57 scheduled laps of the new Miami circuit proved so soporific that driving standards were hastily abandoned in the rush to the flag after the Safety Car deployment. But surely not all the drivers can have been booked on the 9.10pm British Airways flight to Heathrow, and therefore in a 'crashing' hurry to get the race over with?

First Valtteri Bottas squandered fifth place, distracted by the battling Mercedes behind him.

"I missed the apex just a tiny bit and then I got onto the dirty Tarmac," said Bottas. "And, even

though I was going slowly, I understeered into the wall. Luckily it didn't break anything or give me a puncture."

Having glanced the wall, Bottas was able to hold on to seventh thanks to the feeding frenzy for the final four points-paying positions as a race-long battle between the Haas, Aston Martin and Alpine entries came to a head. In the early stages of the race Kevin Magnussen had been told he was racing Russell but, after his stop, Kevin lost too much time trying to pass the Astons. Both Sebastian Vettel and Lance Stroll were essaying long first stints on

hards after starting from the pitlane owing to fuel-cooling issues on the grid.

Magnussen pitted for softer tyres under the Safety Car but the strategy didn't work out for him and he contrived to hit Stroll twice while trying to pass, breaking his own front wing. Having stopped for softs under the Safety Car Esteban Ocon attacked Mick Schumacher for ninth, then Vettel passed both of them at Turn 17 as they ran wide, only for Schumacher to pick up DRS and counter-attack with a clumsy move into Turn 1 which eliminated Vettel from the race.

This brought Alex Albon's Williams into the top 10 instead and made for a nervy final few laps for Ocon, who was under instruction to back up the following drivers to shield eighth-placed Fernando Alonso from the consequences of a five-second penalty for hitting Pierre Gasly earlier. Ocon's work was rendered academic when Alonso was handed another penalty for track-limits infractions.

4 Alonso move sets up Safety Car intervention

This was not a vintage race for Fernando Alonso, bar one of his typically dynamic race starts – during the course of which he managed to tag Lewis Hamilton at Turn 2. It was his extraordinary misjudgment of an overtaking move on Pierre Gasly's AlphaTauri at Turn 1, with 19 laps remaining, which set in motion the chain of events which led to the deployment of the Safety Car.

Alonso made a late lunge up the inside, locking his wheels in the process, and clattered into the AlphaTauri as Gasly turned in to the corner. Over the radio Alonso claimed Gasly "closed the door", a claim which didn't fool the stewards, who handed him a five-second penalty (later followed by another one which dropped him out of the top 10 in the final results). Alonso later conceded the move was "very optimistic".

"Fernando just divebombed me," complained Gasly. "He came to apologise but unfortunately it is not going to give us back the points.

"We tried to do one more lap to see if we could continue, and the car was too damaged. I couldn't even stay on track or turn left."



Vettel (above), before his late-race elimination.
Bottas under pressure from the two Mercs (below)



The damage Gasly suffered from Alonso's lunge led to the Norris crash and Safety Car



After making the call to retire the car, Gasly was cruising back to the pits and attempting to stay out of the way when McLaren's Lando Norris clipped his front-left wheel and spun heavily into the barrier, leaving enough debris that the resulting VSC was upgraded to a full Safety Car deployment.

"It kinks right and the track goes this way, and he's just kind of coming straight across it," said Norris. "I don't know what I should do, drive right next to the wall and hope for the best or something. I was just unlucky, I guess."

5 'Joke' track surface raises driver ire

The temporary track surface of the new Miami International Autodrome drew criticism from the drivers during the inaugural event. A high-bitumen mix using aggregate quarried in Georgia, USA, it was already beginning to peel at Turn 7 before a

single F1 car had turned a wheel. Portions of the Turn 17 hairpin were resurfaced overnight before qualifying on Saturday.

Fernando Alonso said it was "not F1 standards" while Sergio Pérez more bluntly described it as "a joke". Daniel Ricciardo pointed out the main issue, saying that while the racing line itself had "reasonable" grip, offline there was very little grip, making the challenge "one-dimensional".

Of more import, perhaps, was the track layout. There was dislike of the Turn 13-16 section where it has to thread around the elevated slip roads leading to the I-95 Florida Turnpike. Lewis Hamilton said the chicane here reminded him of practicing in his kart around a B&Q car park.

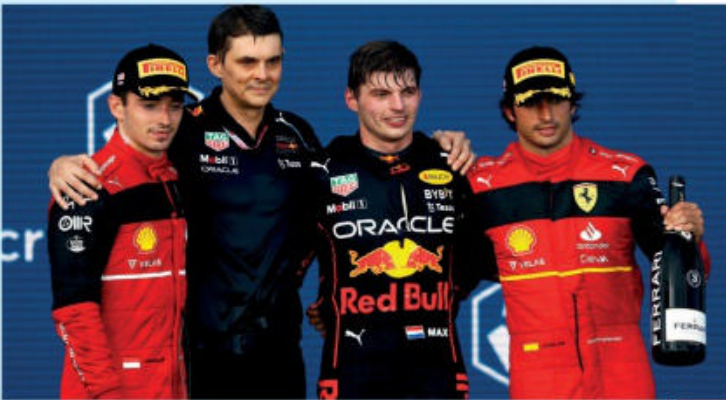
Both Carlos Sainz and Esteban Ocon had heavy impacts with the outside wall at Turn 13 in practice. This area was initially believed to be not fast enough to require a Tecpro barrier, but Ocon's impact was measured at 51G. The FIA deemed it impractical to install Tecpro there during a GP weekend, a decision Ocon labelled "unacceptable".

The track surface was causing problems on Thursday before an F1 car had even run on it



RESULTS ROUND 5

MIAMI INTERNATIONAL AUTODROME /
08.05.22 / 57 LAPS



1st	Max Verstappen	Red Bull	1h34m24.258s
2nd	Charles Leclerc	Ferrari	+3.786s
3rd	Carlos Sainz	Ferrari	+8.229s
4th	Sergio Pérez	Red Bull	+10.638s
5th	George Russell	Mercedes	+18.582s
6th	Lewis Hamilton	Mercedes	+21.368s
7th	Valtteri Bottas	Alfa Romeo	+25.073s
8th	Esteban Ocon	Alpine	+28.386s
9th	Alex Albon	Williams	+32.365s
10th	Lance Stroll	Aston Martin	+37.026s
11th	Fernando Alonso	Alpine	+37.128s* **
12th	Yuki Tsunoda	AlphaTauri	+40.146s
13th	Daniel Ricciardo	McLaren	+40.902s*
14th	Nicholas Latifi	Williams	+49.936s
15th	Mick Schumacher	Haas	+73.305s
16th	Kevin Magnussen	Haas	56 laps/collision**
17th	Sebastian Vettel	Aston Martin	54 laps/damage

*includes 5s penalty for leaving the track and gaining an advantage
**includes 5s penalty for causing a collision

Retirements

Pierre Gasly	AlphaTauri	45 laps - damage
Lando Norris	McLaren	39 laps - collision
Zhou Guanyu	Alfa Romeo	6 laps - water leak

Fastest lap

Max Verstappen 1m31.361s on lap 54

TYRE COMPOUNDS USED



CLIMATE



AIR TEMP

34°C

TRACK TEMP

48°C

DRIVERS' STANDINGS

1 Leclerc	104pts	12 Tsunoda	10pts
2 Verstappen	85pts	13 Gasly	6pts
3 Pérez	66pts	14 Vettel	4pts
4 Russell	59pts	15 Albon	3pts
5 Sainz	53pts	16 Alonso	2pts
6 Hamilton	36pts	17 Stroll	2pts
7 Norris	35pts	18 Guanyu	1pt
8 Bottas	30pts	19 Schumacher	0pts
9 Ocon	24pts	20 Hülkenberg	0pts
10 Magnussen	15pts	21 Latifi	0pts
11 Ricciardo	11pts		





FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 6

THE SPANISH GP IN 5 KEY MOMENTS

1

Ferrari gifts victory to Red Bull – but makes strides with its car

Ferrari no doubt left Spain with mixed feelings.

On the one hand, a worrying engine failure handed a near-certain victory for Charles Leclerc to Max Verstappen, and with it the Scuderia conceded the lead of both championships to Red Bull. Carlos Sainz also had another difficult race – spinning off the track and failing to finish on the podium.

On the other hand, Leclerc qualified fastest for the fourth race out of six and he led commandingly until his engine stopped working. A revised floor and rear wing package appeared to close Ferrari's recent deficit to Red Bull on tyre management. The baking Barcelona heat was an acid test that Ferrari feels it passed. So, although significant points were lost, there are reasons to be cheerful.

"I feel better than I felt after the last two weekends," said a sanguine Leclerc in Ferrari's post-race media debrief. "Mostly because, of course, there's this issue that we've had on the car and I'm very disappointed, but on the other hand, there's plenty of positive signs other than that throughout

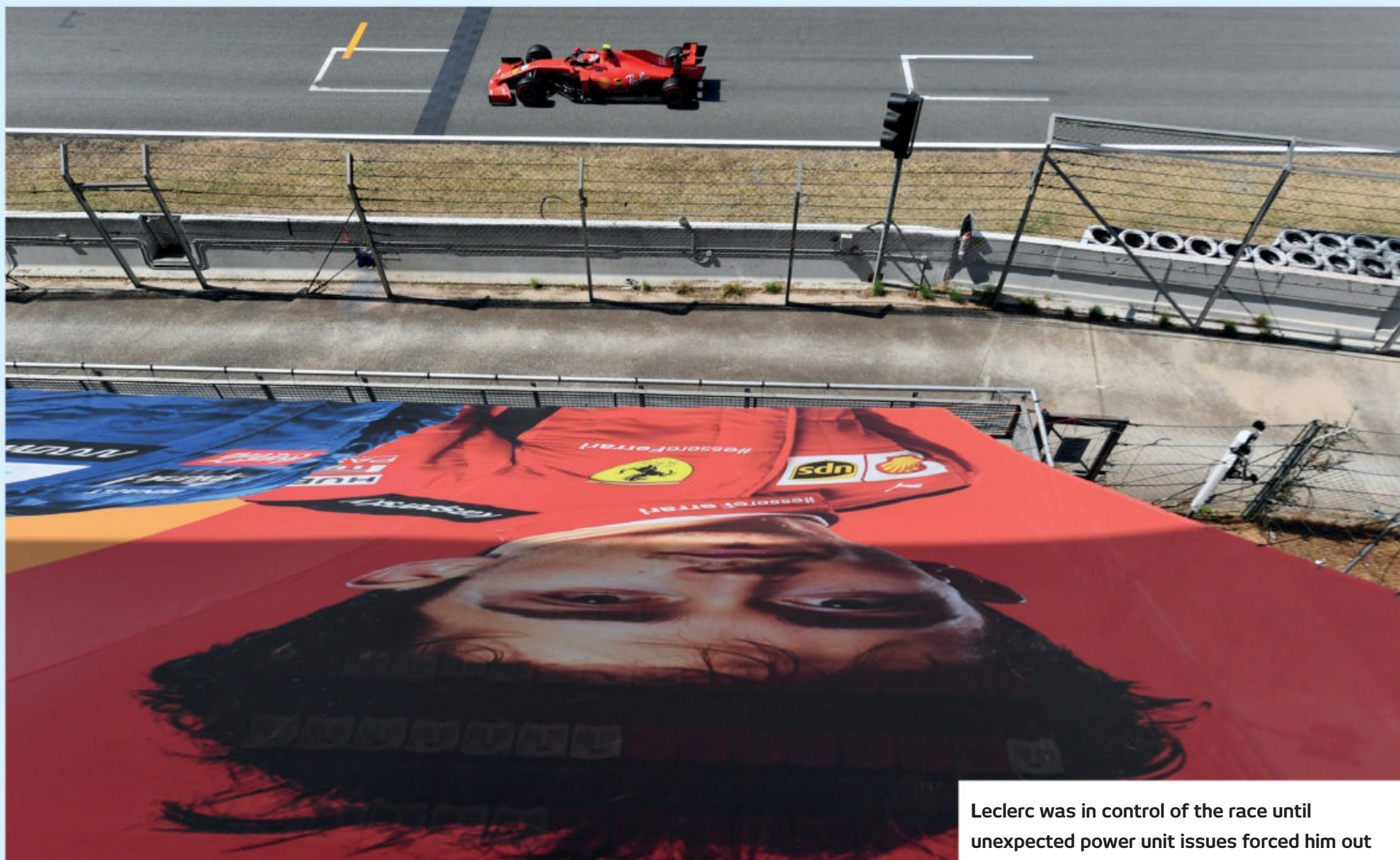
the whole weekend: our qualifying pace, the new package works as expected, which is not always a given. And our race pace and tyre management – the last few races, we've been struggling quite a bit compared to Red Bull. And today it was strong. So yeah. In those situations, I think it's good to also look at the positives. And there are plenty today."

What Ferrari cannot be quite sure of is how Leclerc would have fared in a straight fight. DRS problems for Verstappen that began in Q3 and persisted through the race prevented the world champion bettering a provisional pole position time that was still good enough to place him on the front row of the grid. We'll never know if Max could have made up the 0.323s gap to Leclerc's stunning last-gasp pole lap – but with a clean run you suspect he'd have been much closer...

Aggressively defending the inside line into Turn 1 after the start, in a way Lewis Hamilton failed to do last season, Leclerc built a lead of just over two seconds before a gust of wind blew

Verstappen's RB18 into the Turn 4 gravel. With Max then hemmed in behind George Russell's Mercedes thanks to that DRS problem, Leclerc was under no real threat so could extend his first stint and nurse his tyres. Would Ferrari be feeling differently about tyre management had Verstappen been pushing Leclerc hard throughout? Again, we'll never know – but you suspect life would have been much more difficult for Leclerc before the turbo and MGU-H both failed suddenly not long after his first pitstop.

Speaking of difficulty, this is where Carlos Sainz should have been ready to step into the breach. But having qualified four tenths off pole, made a poor start, survived contact with Sergio Pérez at Turn 1, then been blown off the road himself on the seventh lap of 66, Sainz was not placed to challenge for victory at his home race. He recovered to fourth in a damaged car, thanks partly to Lewis Hamilton's Mercedes critically overheating in the final laps, but Sainz is still struggling to adapt his driving to a car that is "a bit too pointy for my liking".



Leclerc was in control of the race until unexpected power unit issues forced him out

PICTURES: MARK SUTTON; SAM BLOXHAM; CARL BINGHAM



Verstappen's win (right) and another 1-2 (left) put Red Bull at the top of both championships



2 Red Bull makes life hard for itself

A 1-2 result was the perfect outcome for Red Bull, as it leapfrogged Ferrari in both world championships, but the team still made heavy weather of converting this gaping open goal chance into a maximum score.

In some respects, this was always going to be a tough grand prix for Red Bull, given an upgrade schedule that meant only minor front wing and floor alterations appeared on RB18 for Barcelona, while Ferrari and Mercedes both dialled in larger upgrade packages by conducting filming days – at Monza and Paul Ricard respectively – ahead of practice.

Red Bull was well off Ferrari's pace on Friday, though Verstappen got within a tenth of Leclerc in FP3 as Red Bull chipped away at the setup. Verstappen was in pole contention until his DRS

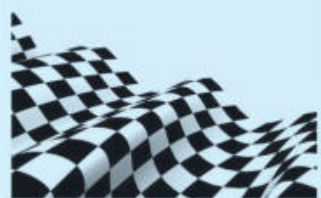
malfunctioned (not for the first time in recent seasons) during his final run in Q3, and his road to victory was made more difficult by flying off the track at Turn 4 in the race, then suffering again with intermittent DRS malfunction despite changing the actuator and flap pivot pins before the start.

"Once you get the light and the activation beep, then you press the paddle. If it doesn't open, there's clearly an issue," he explained. "I've spammed it like 50 times at one point on the straight and it's just not opening, so there was clearly an issue. I mean, I tried all different kinds of things, stay off the kerb, on the kerb, open it a tiny bit later but it was just broken – or like malfunctioning. So yeah, we clearly have an issue there on this wing."

Christian Horner admitted Red Bull might have

been "too ambitious" with its weight-saving drive, causing the DRS mechanism to become unreliable as the wing flexes under load. Red Bull converted Verstappen from a two-stop to a three-stop strategy. Russell's Mercedes was too slow and too hot to challenge over a full distance, so the only remaining obstacle was the sister Red Bull of Pérez – who was told to move aside.

Pérez called this "very unfair" and suggested after the race that he and Red Bull "have to discuss a few things internally". Perhaps Horner's argument about a two-second tyre delta and it being an "unfair fight anyway" rings true, but it's never good for morale to remind your number-two driver of his true place in such a fashion. Welcome to Max's house Checo! ▶



FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 6

3 Mercedes makes a vital step forward

This was a **breakthrough** race for the defending constructors' champion, which built on the promise shown during Friday practice in Miami. This time George Russell lapped within a tenth and a half of Charles Leclerc's Ferrari in FP2 and FP3, before qualifying ahead of Sergio Pérez's Red Bull. Being 0.643s off pole is the nearest to the pace Mercedes has been all season.

Team boss Toto Wolff told *Sky Sports Mercedes* now understands the root of the severe bouncing that has forced it to sacrifice performance by running the car too high, and also stifled development while engineers have been engaged in understanding the problem.

"It's an aerodynamic effect that's created from the floor swinging," Wolff explained. The team now feels it has a baseline on which it can start adding proper performance to the car in coming races.

The race was a mixed bag. Russell survived pinballing with Pérez and Sainz at Turn 1 to lead the race for a time, but George was flattered by Verstappen's DRS problem – and ultimately W13 still lacks the performance necessary to challenge even a hampered Red Bull over a race distance. Both Mercedes drivers also had to deal with critical overheating – even when running in clean air.

"Yeah, there are some concerns," admitted Wolff. "We had a water leak on Lewis's car and general overheating on George's." This does not bode well for the summer months, or indeed the high

Russell outqualified a Red Bull in Spain and claimed third, despite overheating issues



altitude of Austria, where Mercedes has traditionally struggled with overheating.

Mercedes at least had strong straightline speed in Barcelona, allowing Hamilton to recover from being clattered by Kevin Magnussen's errant Haas on lap one to unexpectedly finish inside the top five. The team forecast at least eighth after Hamilton was forced into the pits with a puncture, and he would have finished fourth without the overheating.

Hamilton admits he's still generally struggling with the rear of the car compared with Russell, so must adapt his driving, and may now adopt what he called an 'experiment' Mercedes tried on Russell's car "which ultimately ended up being the better way to go in qualifying".

4 Aston Martin provokes new copycat row

Two seasons on from provoking a copycat row with the controversial 'pink Mercedes' of 2020, the rebranded Aston Martin team entertained further controversy by introducing a heavily revised version of the AMR22 dubbed the 'Green Bull' owing to similarities with Red Bull's RB18.

The FIA released a statement essentially saying, 'nothing to see here', but Red Bull said it would conduct an internal probe to ensure no Intellectual Property (via a data leak or some such) has escaped Milton Keynes. There are clear similarities between the cars when viewed in profile – but they are not identical, and it's hardly surprising Aston Martin should follow Red Bull's lead when Red Bull's ex-head of aero Dan Fallows began working for Aston in April.

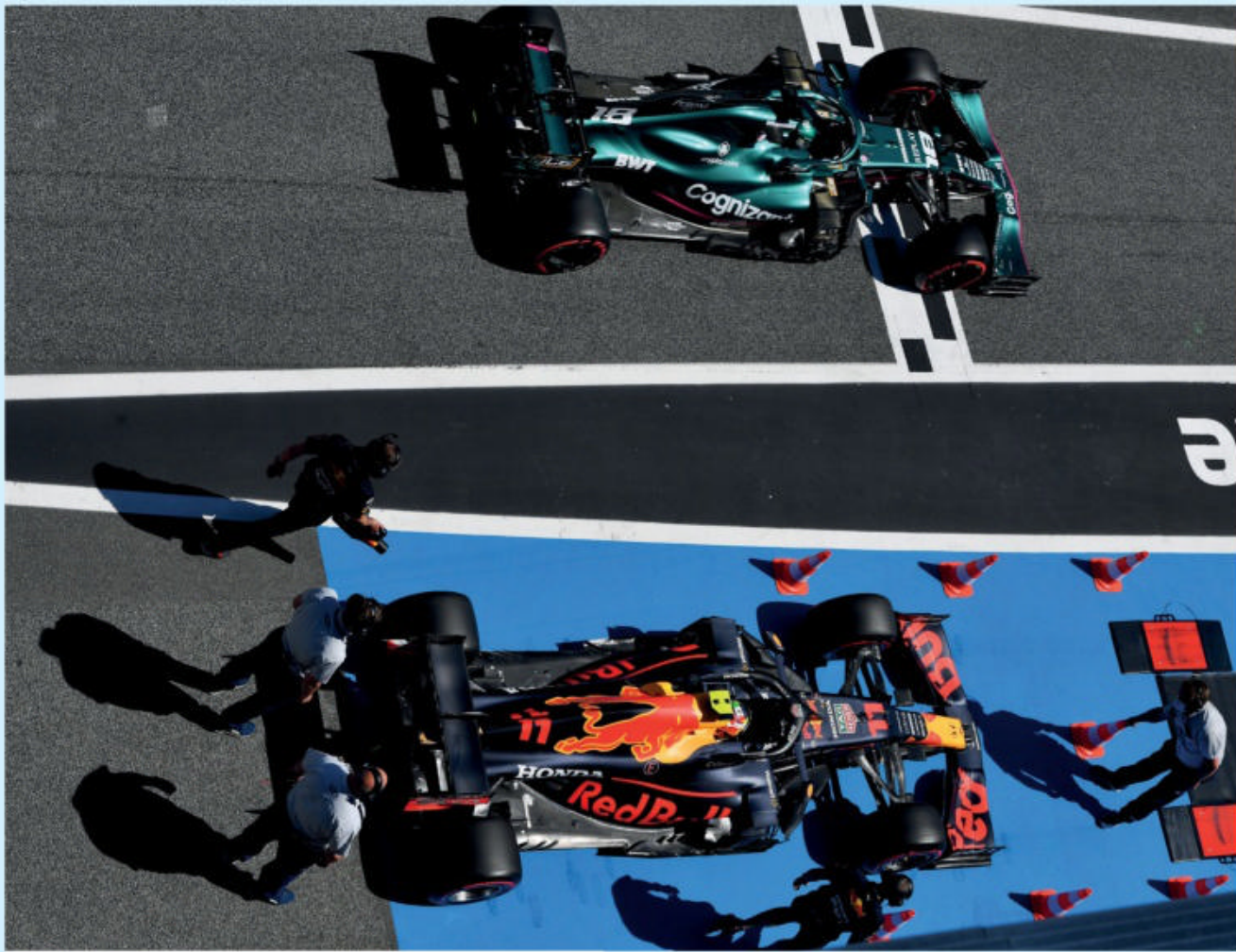
But Aston Martin's chief technical officer Andrew Green said his team built this car with two potential development pathways in mind, and it's now following the second of those having decided route one is a dead-end. He says this new concept pre-dates Fallows' arrival.

In any case, Aston took a step back in Spain. Sebastian Vettel and Lance Stroll both failed to escape Q1 in qualifying and, although Vettel finished one place outside the points, he was well adrift of Yuki Tsunoda's AlphaTauri and "doing like F2 qualifying pace all race" to keep the tyres alive.

"There's a lot of optimisation we need to do,"

Hamilton recovered well after his opening lap puncture following a tap from Magnussen's Haas





**A revised AMR22 passes a stationary RB18.
The FIA has ruled that the Aston is legal**

admitted Green, who explained both drivers suffered excessive oversteer in qualifying and that Aston chose an insufficient cooling setup based on expecting lower ambient temperatures. "It's a completely different car, it needs a run around all the set-ups to see where the sweet spot is.

"For sure it's got way more potential than the car that went before it. We've just got to start extracting that performance and start developing it, really. It's [effectively] a launch car."

5 Haas maintains pace but scores no points again

Guenther Steiner has a pet theory that F1 makes too much of aerodynamic upgrades and their effect on performance. Many midfield teams, particularly Alfa Romeo, Alpine, Aston Martin and McLaren, made substantial revisions for Barcelona, while Steiner's Haas team changed... well, nothing.

Valtteri Bottas qualified the updated Alfa – with revised front and rear wings, new sidepods, engine cover and front and rear suspension – best of the rest behind Ferrari, Red Bull and Mercedes, but less than a tenth clear of Kevin Magnussen's Haas, Kevin having been hampered by a DRS glitch in Q3.

This was shaping up to be a fascinating test of two competing approaches, until Magnussen over-exerted himself at Turn 4 on the opening lap. After their collision, Hamilton completed the second lap almost 54s adrift of the leader. Magnussen was more than 1m13s behind. It took the Haas more than half of the race to finally latch on to Alex Albon's Williams.

Meanwhile, Bottas ran inside the top six mostly, and was fourth with under 10 laps remaining – until Sainz and Hamilton overtook. Mick Schumacher ran ahead of Bottas early on, but a combination of higher-than-expected tyre degradation, slow pitwork and a lack of flexibility on a planned two-stop strategy, meant Haas again left the paddock empty handed.

Magnussen's trip into the Turn 4 gravel on the opening lap wrecked any hope of points



RESULTS ROUND 6

CIRCUIT DE BARCELONA-CATALUNYA /
22.05.22 / 66 LAPS



1st	Max Verstappen	Red Bull	1h37m20.475s
2nd	Sergio Pérez	Red Bull	+13.072s
3rd	George Russell	Mercedes	+32.927s
4th	Carlos Sainz	Ferrari	+45.208s
5th	Lewis Hamilton	Mercedes	+54.534s
6th	Valtteri Bottas	Alfa Romeo	+59.976s
7th	Esteban Ocon	Alpine	+75.397s
8th	Lando Norris	McLaren	+83.235s
9th	Fernando Alonso	Alpine	+1 lap
10th	Yuki Tsunoda	AlphaTauri	+1 lap
11th	Sebastian Vettel	Aston Martin	+1 lap
12th	Daniel Ricciardo	McLaren	+1 lap
13th	Pierre Gasly	AlphaTauri	+1 lap
14th	Mick Schumacher	Haas	+1 lap
15th	Lance Stroll	Aston Martin	+1 lap
16th	Nicholas Latifi	Williams	+2 laps
17th	Kevin Magnussen	Haas	+2 laps
18th	Alex Albon	Williams	+2 laps*

*includes 5s penalty for exceeding track limits

Retirements

Zhou Guanyu	Alfa Romeo	28 laps - cooling
Charles Leclerc	Ferrari	27 laps - turbo/MGU-H

Fastest lap

Sergio Pérez 1m24.108s on lap 55

TYRE COMPOUNDS USED



CLIMATE



AIR TEMP

36°C

TRACK TEMP

51°C

DRIVERS' STANDINGS

1 Verstappen	110pts	12 Tsunoda	11pts
2 Leclerc	104pts	13 Gasly	6pts
3 Pérez	85pts	14 Vettel	4pts
4 Russell	74pts	15 Alonso	4pts
5 Sainz	65pts	16 Albon	3pts
6 Hamilton	46pts	17 Stroll	2pts
7 Norris	39pts	18 Guanyu	1pt
8 Bottas	38pts	19 Schumacher	0pts
9 Ocon	30pts	20 Hülkenberg	0pts
10 Magnussen	15pts	21 Latifi	0pts
11 Ricciardo	11pts		





FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 8

AZERBAIJAN GP

10-12 June 2022

Baku City Circuit



PICTURE: CHARLES COATES. ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

Very much a circuit of two halves, Baku combines a technical challenge with one of the fastest straights on the F1 calendar. The layout also passes through an interesting cross-section of the Azerbaijan capital's built environment, starting on the boulevard overlooking the Caspian Sea, passing the seat of government, then tracking a Monaco-style urban stop-start through a modern area of the city before looping around the UNESCO-listed walled old town.

This track presents a high degree of difficulty for both drivers and machinery, demanding precision and resilience. The majority of race outcomes here have been defined by human error and mechanical failures, one sometimes leading to the other...

2021 RACE RECAP

Charles Leclerc took another surprise pole for Ferrari ahead of Lewis Hamilton, with Max Verstappen third. But while Hamilton eventually surged through to take the lead, a slow pitstop – he had to wait for Pierre Gasly's AlphaTauri to pass before leaving the box – meant he dropped behind the Red Bulls.

The Safety Car was deployed to cover a mid-race incident in which Lance Stroll's Aston Martin suffered a tyre failure as he accelerated onto the main straight. But when Verstappen had a similar blow-out at the end of lap 46 of 51, the race was stopped after four laps behind the Safety Car. The race was restarted from lap 50 with Sergio Pérez on pole – and, when Hamilton selected the wrong brake mode and went off at the first corner, victory went to Pérez.

KEY CORNER: TURN 8 At the entry to the 'old town' section of the circuit, the track abruptly narrows while spearing upwards and to the left. Delicacy and precision are required here to avoid an embarrassing and race-ending interface with the tyre barrier.



RACE DATA

Circuit Baku City Circuit**First GP** 2016**Number of laps** 51**Circuit length** 3.730 miles**Race distance** 190.170 miles**Lap record** 1m43.009s

Charles Leclerc (2019)

F1 races held 5**Winners from pole** 2**Pirelli compounds** TBA

CAR PERFORMANCE

Downforce level Low**Cooling requirement** Medium**Full throttle** 61%**Top speed** 210mph**Average speed** 130mph

TIMETABLE (UK TIME)

Friday 10 June**Practice 1** 12:00-13:00**Practice 2** 15:00-16:00**Saturday** 11 June**Practice 3** 12:00-13:00**Qualifying** 15:00-16:00**Sunday** 12 June**Race** 12:00**Live coverage** Sky Sports F1**Highlights** Channel 4

THE PAST FIVE WINNERS HERE



2021

Sergio
Pérez
Red Bull

2019

Valtteri
Bottas
Mercedes

2018

Lewis
Hamilton
Mercedes

2017

Daniel
Ricciardo
Red Bull

2016

Nico
Rosberg
Mercedes

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FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 9

CANADIAN GP

17-19 June 2022

Circuit de Gilles Villeneuve



PICTURE: ZAK MAUGER; ILLUSTRATION: ALAN ELDREDGE



RACE DATA

Circuit Circuit de Gilles Villeneuve**First GP** 1978**Number of laps** 70**Circuit length** 2.709 miles**Race distance** 189.685 miles**Lap record** 1m13.078s

Valtteri Bottas (2019)

F1 races held 40**Winners from pole** 19**Pirelli compounds** TBA

CAR PERFORMANCE

Downforce level Medium**Cooling requirement** Medium**Full throttle** 67%**Top speed** 217mph**Average speed** 132mph

TIMETABLE (UK TIME)

Friday 17 June**Practice 1** 19:00-20:00**Practice 2** 22:00-23:00**Saturday** 18 June**Practice 3** 18:00-19:00**Qualifying** 21:00-22:00**Sunday** 19 June**Race** 19.00**Live coverage** Sky Sports F1**Highlights** Channel 4

THE MAIN EVENT

Three-hundred-and-seventy miles long, the St Lawrence Seaway connects the Atlantic Ocean to the Great Lakes via the St Lawrence river itself and a number of locks and canals. Later in the 20th century this feat of engineering was augmented by another artificial addition where the river passes through the city of Montréal, the Île Notre-Dame. Built from spoil excavated during construction of the Metro in the 1960s, this artificial island hosted Expo 67 and rowing and canoeing events in the 1976 Summer Olympics.

It's now best known for its casino and the Circuit de Gilles Villeneuve, which returns to the F1 calendar after a two-year COVID hiatus. Hard on tyres and brakes, it's often described as a street circuit without the streets: the barriers are always scarily close.

2019 RACE RECAP

This outing proved to be another proverbial nail in the coffin for Sebastian Vettel's Ferrari career. Fifty-five points down on Lewis Hamilton with almost a third of the season gone, Vettel needed a strong result in Canada and for a while it looked as though it was on the cards. Vettel started from pole and maintained the lead in the opening laps.

After the pitstop cycle Vettel still led from Hamilton but made a blunder on lap 48 (of 70), outbraking himself at Turn 3 and running over the grass, then squeezing Hamilton towards the wall as he rejoined, preventing the Mercedes from passing. The stewards handed down a five-second penalty, so although Vettel crossed the line 1.3s ahead, he was demoted to second once the penalty was applied.

KEY CORNER: TURN 8 The entry to this chicane has been relatively innocuous in recent years, but the new technical formula will change that. The new cars are heavy and don't like kerbs, which will make this corner – critical for the run to the hairpin – all the more important to nail.



THE PAST FIVE WINNERS HERE



2019

Lewis
Hamilton
Mercedes

2018

Sebastian
Vettel
Ferrari

2017

Lewis
Hamilton
Mercedes

2016

Lewis
Hamilton
Mercedes

2015

Lewis
Hamilton
Mercedes

F1 Racing Fine Art Prints



Damon Hill by John Batchelor

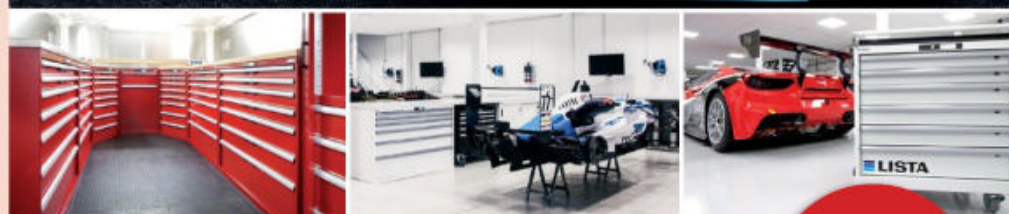
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reservoir-watch.com

The latest addition to Reservoir's range of timepieces inspired by the dashboard instrumentation of the legendary Porsche 356 Speedster, the Kanister Silver, incorporates a silver-finish dial within a 41.5mm grade 5 titanium case, along with two different quick-change strap options. Within, the watch features Reservoir's



new RSV-240 self-winding mechanical movement, which has a 56-hour power reserve.

As with other watches in the Kanister range, the presentation of time is slightly unusual, in keeping with the Porsche tachometer theme: a single polished hand counts the seconds around the radius of the dial, while a jumping counter denotes the hours. Another sweeping indicator resembling a fuel gauge denotes the state of charge. The Kanister Silver is supplied with a pair of 20mm leather straps in black and taupe finish, engineered for quick changes.



LN4 NEON APPAREL

Price £31-£75
mclarenstore.com

GP Racing principal photographer Steven Tee reports Lando Norris was the most popular driver on the recent Emilia Romagna GP podium, and that the crowd was actually chanting his name when he received his trophy. As well as being a social media star, Lando has now achieved a powerful

enough branding status to warrant his own clothing range in McLaren's expansive merchandise collection.

Goods range from junior-size t-shirts to hoodies, in styles which range from plain colours featuring luminous yellow-green 'LN4' logos to a striking tie-dye effect.





BRM RACING FOR BRITAIN

Authors Ian Wagstaff, Doug Nye

Price £120-£2,500

porterpress.co.uk



Sixty years ago Graham Hill took on Jim Clark for victory in the world championship, ultimately delivering the silverware for his BRM team. This was a state of affairs considered highly unlikely for many years, and by many wise and influential people – not least Hill himself, who had threatened to leave unless the often dysfunctional organisation sorted itself out.

Founded as a British national prestige project in the aftermath of World War Two, BRM lacked neither ambition nor daring, but it perhaps overestimated its ability to deliver – as evinced by a string of

disappointments through the 1950s. It came good in the early 1960s before succumbing once again to over-reach, fizzling out in the 1970s after its industrialist benefactor Sir Alfred Owen stepped away.

As you would imagine from the pedigree of the authors – Doug Nye has already written a three-volume history of the team – this limited-edition book is definitive. Produced in collaboration with the Owen family, it features previously unseen archive material and is available in various collectors' editions signed by luminaries including Damon Hill and Sir Jackie Stewart.



FUNKO POP! RACING LEWIS HAMILTON

Price £12

funkoeurope.com

Funko Pop! is a cultural phenomenon which has passed *GP Racing* by until now. The company's range of desktop vinyl collectibles includes officially licensed objects based on well-known TV and film properties such as *Harry Potter*, *Star Wars* and *Game of Thrones*. Slightly more niche entries in the genre include Kramer from *Seinfeld*, and Nerd Deadpool.

It's also moving into the arena of motorsports – you can already get a vinyl Jeff Gordon. In partnership with the Mercedes F1 team, Funko is launching 10cm vinyl figures of Lewis Hamilton and (slightly late to the party here) Valtteri Bottas. Frequently asked questions about Funko on Google include, "Is it OK to take Funko Pops out of the box?" Don't ask us...





THE FINAL LAP

FINISHING STRAIGHT

@CoddersF1 facebook.com/gpracingonline



FLAT CHAT

{ FULL THROTTLE
MUSINGS WITH
STUART CODDLING }

PICTURES  **motorsport**
IMAGES

DOES PHYSICAL TOLL NEED TO BE ADDRESSED?

Last month our cover feature on Mercedes' various woes made it very clear that the porpoising phenomenon was well-known in the previous era of ground-effect aerodynamics. Another troubling historic consequence of generating downforce through underbody airflow is now coming into focus: its effect on driver health.

In 1982, the peak of the last ground-effect era, teams ran their cars as low and stiff as possible in order to attain peak downforce and reduce pitch sensitivity. Williams even went so far as testing an FWo8 at Paul Ricard with no suspension movement (rumours abounded that the Lotus 91 would feature no suspension at all, though this didn't come to pass). Alan Jones, the world champion, quickly identified that while the performance gain was worthwhile, some way would have to be found to mitigate the physical effects on the driver.

"Perhaps you could sit on your wallet, Alan," said Frank Williams.

"You'd have to give me something to put in it first," rejoined Jones.

The lap time gain at like-for-like circuits from 1981 to '82 was huge, an order of whole seconds – more than can be accounted for by tyre and engine development and more potent fuels. But the cars were difficult and uncomfortable to operate – so much so that drivers would complete races in a state of exhaustion, or sometimes not finish at all. Patrick Tambay suffered what was described as a pinched nerve in his shoulder, causing him to pull out of the Swiss GP after qualifying in order to maximise his chances of being fit to perform in front of Ferrari's home crowd at Monza.

After a miserable year punctuated by grotesque

Is chassis stiffness to combat porpoising causing health issues? Sainz feels there should at least be a debate about it



accidents the FIA brought in the flat-bottom regulations which practically eliminated ground effect, and enabled suspension settings to return to normality.

In raiding the ground-effect closet to rebalance responsibility for downforce production away from wings, modern F1 has done more than just reintroduce porpoising. The cars have to run

stiffer once more to mitigate the bouncing effect, and chassis setups are cruder because exotic means of controlling suspension movement have also been outlawed, in the name of controlling costs and improving competition. Already the drivers are feeling the impact.

As early as the Emilia Romagna Grand Prix, George Russell – among the fittest of the Generation Z cohort – was complaining of unusual aches and pains. "This is the first weekend I've truly been struggling with my back, and almost like chest pains from the severity

of the bouncing," he said. "It's just what we have to do to go and do the fastest laps."

Even relatively smooth circuits feature kerbs which have to be ridden at speed, which puts a potentially injurious jolt through the occupant's spine. "We need to think as drivers and F1 how much of a toll a driver should be paying for his back and his health in an F1 career with this kind of car philosophy," said Carlos Sainz before the Spanish GP. "We need to open the debate.

"Do we need to run as stiff for our necks and back as we are having to run lately, with this car mass? It's more a philosophical question that I put out there, maybe for F1 to rethink about how much the driver needs to actually pay a price in his career with his health, in order to combat this."

There will, of course, be those who say F1 drivers are paid well to do their jobs, and that they should get on and do them. But should sportspeople suffer long-term for our entertainment? That's a question being asked in rugby and even football at the moment, where the effects of concussion are at last being widely considered. Given the lawsuits brewing in that space, F1 would do well to start allocating resources towards welfare as well as wow factor.

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SUMMER HIGHLIGHTS

Nothing beats experiencing the thrill and atmosphere of live motor racing. MSV's 2022 summer highlights are listed below, but for a full calendar and in-depth information visit our website www.msv.com

Sat 4/Sun 5 June	Cadwell Park	Historic Wolds Trophy
Sun 5 June	Donington Park	Vintage Motorsport Festival
Sat 11/Sun 12 June	Oulton Park	Kwik Fit British Touring Car Championship
Sat 11/Sun 12 June	Brands Hatch	American SpeedFest 9
Sun 19 June	Brands Hatch	Tunerfest South
Sat 25/Sun 26 June	Snetterton	British GT and GB3 Championships
Fri 15 - Sun 17 July	Donington Park	MOTUL FIM Superbike World Championship
Sat 16/Sun 17 July	Snetterton	Snetterton Historic 200
Sat 16 July	Oulton Park	Tunerfest North
Fri 22 - Sun 24 July	Brands Hatch	Bennetts British Superbike Championship
Fri 29 - Sun 31 July	Oulton Park	Oulton Park Gold Cup
Sun 7 August	Brands Hatch	Mini Festival
Sat 13/Sun 14 August	Snetterton	Kwik Fit British Touring Car Championship
Sun 14 August	Brands Hatch	Festival Italia
Sat 20/Sun 21 August	Donington Park	British Truck Racing - Convoy in the Park
Sat 27 - Mon 29 August	Cadwell Park	Bennetts British Superbike Championship
Mon 29 August	Donington Park	Tunerfest Midlands
Fri 9 - Sun 11 September	Snetterton	Bennetts British Superbike Championship
Sat 10/Sun 11 September	Brands Hatch	British GT and GB3 Championships



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